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Skeptical Inquirer

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Investigating Traditional Chinese Medicine

A Report of the Second CSICOP Delegation

CSICOP at Twenty

A Retrospective from Paul Kurtz

Maria's Near-Death Experience

Alternative Health Education and Pseudocredentialing

SPECIAL REPORT

Government-Funded Grant for Therapeutic Touch

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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° Associate Member, CSICOP Executive Council

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Manuscripts, letters, books for review, and editorial inquiries should be addressed to Kendrick Frazier, Editor, SKEPTICAL INQUIRER, 944 Deer Drive NE, Albuquerque NM 87122-1306. FAX 505-828-2080. For Guide for Authors, see page 65 of the May/June 1996 issue or fax request to the Editor.

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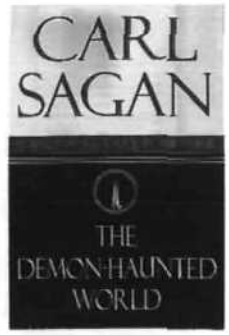

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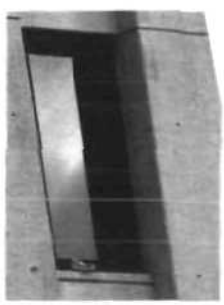

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The Great Wall of China
(photo: Jock Fistick)

EDITOR'S NOTE

Inquiry and Exuberance

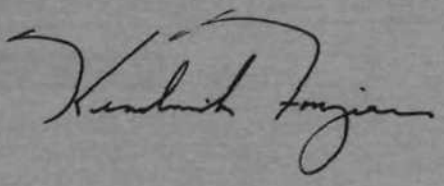
Paul Kurtz, in the article beginning on the next page, describes the founding of the Committee for the Scientific Investigation of Claims of the Paranormal twenty years ago, some of the highs and lows of our first two decades, concerns that motivated us, and principles that have guided us.

During much of that time CSICOP has been under various kinds of attack, often from those whose appreciation for scientific, skeptical examination of claims and the value of informing the public about scientific inquiry is somewhat less enthusiastic than ours. But, as Paul says, CSICOP has engendered broad, worldwide support, the preponderance of scientific opinion generally supports our positions, and all efforts to undermine the committee have failed. As he puts it, "CSICOP is alive and well and stronger than ever; and it is now a well-established part of the contemporary intellectual and scientific landscape."

A large part of that success is due to Paul himself. "Heading CSICOP as chairman these twenty years has been exhilarating for me," he says. It's an appropriate word, for in addition to his obvious intellectual and readership attributes, Paul has always brought to the task a perhaps more surprising quality about which he once devoted an entire book: *Exuberance*. That zest for life, that positive attitude, that optimism is, happily, contagious, and it has helped carry us all through many difficult times. It has been a fun twenty years.

* * *

Traditional Chinese medicine has provoked widespread interest in America and Europe. It's part of the newfound, often uncritical "acceptability" in many circles of alternative medicine. Following up on our first CSICOP visit to China in 1988, CSICOP last year was invited to send another delegation to China—a physician, a neuropsychologist, and a medical journalist. They saw firsthand some of the practitioners of traditional Chinese medicine, visited leading laboratories, and assessed their studies. The first part of their two-part report, which draws upon not only their own observations and their understanding of the culture, but their examination of the published literature, appears in this issue.



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CSICOP at Twenty

PAUL KURTZ

Founded twenty years ago amid controversy and uncertainty, CSICOP is now a well-established part of the contemporary intellectual and scientific landscape. The constructive skepticism it promotes is all the more crucial now with the emergence of global mass media and a seemingly reduced appreciation of the scientific attitude.

A Brief History

The Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) was established at a specially convened international conference on "The New Irrationalisms: Antiscience and Pseudoscience," April 30 and May 1, 1976, on the newly opened Amherst campus of the State University of New York at Buffalo where I was a philosophy professor at the time. One of the reasons that prompted me to form such a committee was the fact that I helped initiate in late 1975 a statement, "Objections to Astrology," which was endorsed by 186 leading scientists from the National Academy of Sciences, including eighteen Nobel Prize-winners. This statement aroused such an affirmative response that I decided that we needed to go beyond astrology and deal with the wide range of other paranormal claims. The initial call—which I drafted—announcing the formation of a committee read as follows:

> There has been an enormous increase in public interest in psychic phenomena, the occult, and pseudoscience. Radio, television, newspapers, books, and magazines are presenting the case for psychic healing, psychokinesis, immortality, reincarnation, Kirlian photography, orgone energy, psychic surgery, faith healing, astrology, the Chariots of the Gods, UFOs, Dianetics, astral projection, exorcism, poltergeists, and the "talents" of Uri Geller, Edgar Cayce, and Jeane Dixon. Often, the least shred of evidence for these claims is blown out of proportion and presented as "scientific" proof.

The statement went on to say that

> Many individuals now believe that there is considerable need to organize some strategy of refutation. Perhaps we ought not to assume that the scientific enlightenment will continue indefinitely; for all we know, like the Hellenic civilization, it may be overwhelmed by irrationalism, subjectivism, and obscurantism. Perhaps antiscientific and pseudoscientific irrationalism is only a passing fashion; yet one of the best ways to deal with it is for the scientific and educational community to respond—in a responsible manner—to its alarming growth.
>
> With these thoughts in mind we are forming an organization tentatively called the Committee to Scientifically Investigate Paranormal and Other Phenomena.

The name of the Committee was changed shortly thereafter to its present form.

The statement continued

> We wish to make it clear that the purpose of the Committee is not to reject on a priori grounds, antecedent to inquiry, any and all such claims, but rather to examine them openly, completely, objectively, and carefully.

In the statement we speculated about the future course of the Committee by saying that we did not know how large the Committee would become or how ambitious its efforts would be. And we invited leading scientists and experts in many fields to join us in this important venture.

The call was signed by many distinguished scientists, scholars, and skeptics, including George Abell, Isaac Asimov, Antony Flew, Martin Gardner, Sidney Hook, Philip Klass, Ernest Nagel, W. V. Quine, B. F. Skinner, James Randi, Marcello Truzzi, and others. The organizing meeting was held under the auspices of *The Humanist* magazine, which I then edited. I had invited as many skeptical researchers as I could locate to the conference—in all, some 300 people attended.

News of the Committee's formation became immediately known worldwide and was featured in newspapers as diverse as the *New York Times*, the *Washington Post*, and *Pravda*, and science magazines such as *Science*, the *New Scientist*, and *Science News*. Indeed, a story in *Science News*, written by its then editor, Kendrick Frazier, who attended the conference elicited more mail than any other feature then published in that magazine.

The Committee apparently crystallized a widely felt need that there should be some responsible scientific and scholarly body that would ferret out and examine the popular claims that were proliferating in the broader culture. This would have to be an interdisciplinary body that would draw upon specialists in many fields, who would cooperatively investigate claims of

the paranormal.

Later in 1976, CSICOP established a new journal, originally called *The Zetetic*, edited by Marcello Truzzi (who also served as cochairman of the Committee). In the first year, a disagreement about editorial policy ensued between Truzzi and other members of the Executive Council of CSICOP. Truzzi wanted a scholarly sociological magazine, and he wished that proparanormalists be equally represented in its pages. The Executive Council said that there was no avowedly skeptical magazine in existence and it wished to deal not only with scholarly questions but those of popular interest as well. After a vote of no-confidence, Marcello Truzzi resigned. The journal was renamed the SKEPTICAL INQUIRER, and Kendrick Frazier was unanimously elected its new editor, a position he has held with distinction ever since. (Frazier has outlined the history of CSICOP and the SKEPTICAL INQUIRER in an article in the *Encyclopedia of the Paranormal*, 1996, Prometheus Books, Amherst N.Y.).

The SKEPTICAL INQUIRER's circulation grew in 20 years from 1,000 to more than 50,000—with little capital and no advertising revenue, supported enthusiastically by its readers.

Heading CSICOP as chairman these twenty years has been exhilarating for me. CSICOP has been embroiled in controversy from the start, attacked on all sides by the disciples of the paranormal—from parapsychologists and astrologers to UFOlogists and alternative health-care therapists. Members of the Executive Council of CSICOP have played a brilliant role on the national and international scene: Phil Klass in keeping alive a skeptical attitude about UFO visitations; Ray Hyman, James Alcock, and Susan Blackmore in carefully examining, in cooperation with parapsychologists, claims of psychic phenomena; Martin Gardner and James Randi in fearlessly debunking the various forms of nonsense offered as gospel truth on the popular scene. There are so many other CSICOP associates who have worked for the cause that it would be difficult to enumerate them all here.

Many leading scientists have flocked to the banners of CSICOP and the SKEPTICAL INQUIRER and have supported our aims. Among our distinguished Fellows and Scientific Consultants are Carl Sagan, Stephen Jay Gould, Francis Crick, Glenn Seaborg, Murray Gell-Mann, Elizabeth Loftus, and Milton Rosenberg.

There have been massive efforts to discredit the Committee, and even to destroy it: such as the intemperate attacks on the study of Michel Gauquelin's Mars effect and Klass's spoofing of space alien proponents; Hyman's tangle with parapsychologists; and, in recent years, efforts by Uri Geller, Eldon Byrd, and others to embroil CSICOP and Randi in protracted and costly legal suits. All of these have failed. Today, I am happy to report, CSICOP is alive and well and stronger than ever; and it is now a well-established part of the contemporary intellectual and scientific landscape.

From its inception, CSICOP has been an international organization: its Fellows, Scientific and Technical Consultants, and Executive Council members come from dozens of countries worldwide. CSICOP has helped to organize cognate committees in many parts of the world—the United Kingdom, France, Canada, Mexico, and Australia at first, and later, in an additional twenty or more countries. From its start CSICOP has been a grass-roots movement, especially with the formation of forty local and regional groups worldwide. Although these groups are autonomous and independent, we share common goals and methods, and we have formed a unique international network. CSICOP has also helped to initiate and convene meetings in Europe, Canada, Latin America, and elsewhere. The twentieth anniversary will mark the first World Skeptics Congress (to be held June 20–23, 1996). Assuming our international character was inevitable: first because science is international; and second because belief in the paranormal has become a worldwide phenomenon.

CSICOP, the SKEPTICAL INQUIRER, and the entire skeptical network have emerged as the "official opposition" to paranormal claims. Leading print and broadcast journalists and media producers constantly come to us for the scientific viewpoint, and we have provided a reliable source of information to scholars and researchers, professionals and lay people. We book guests on hundreds of television and radio programs worldwide annually and we participate in hundreds of news interviews. We are a constant resource for those who need up-to-date information. We need to be fair-minded and ever-ready to examine any responsible claim to any truth, however bizarre. Yet we also need to evaluate the claims as we see them. They are more often than not unproved, uncorroborated, and based on insufficient evidence.

Our unkindly critics call us "the gatekeepers of science," and if we reject a claim they accuse us of being "close-minded." Alas, the role of the skeptic is overshadowed in the media by comparison with the pro-paranormal viewpoint, but at least we have a presence. More important is the fact that the preponderance of scientific opinion generally supports our positions.

Since our inception, we have broadened our subject matter beyond the paranormal to other borderline areas of science: repressed memory, facilitated communication, alternative health cures, multiculturalism, postmodernism, and other interdisciplinary issues that in our view undermine the integrity of science.

Our overall goal is to encourage a responsible approach to the objective examination of paranormal and other unusal claims, and to develop a public appreciation for science, the methods of scientific inquiry, and the need for critical thinking.

CSICOP has expanded its programs enormously. In addition to publishing the SKEPTICAL INQUIRER (now bimonthly) and convening major conferences, we now sponsor a wide range of other activities. We publish (quarterly) the *Skeptical Briefs*; and we have established the Center for Inquiry (shared with the Council for

Secular Humanism). We assist in the production of radio and television programs and thus have become a multimedia center. We have created a major research library of skeptical literature (the John and Mary Frantz Skeptics' Library), and we provide a full range of seminars, workshops, and course curricula. We are also taking the lead in training new skeptical inquirers. The Center for Inquiry encourages research; it serves as a think-tank, attempting to probe the reasons why people believe what they believe and to offer alternative explanations for alleged phenomena. Significantly, we have created a skeptical movement. We have helped to spawn more than 50 skeptical newsletters and magazines, now published by skeptical organizations worldwide—though clearly the SKEPTICAL INQUIRER continues to serve as the main reference source for the entire skeptical movement.

Retrospective Reflections

When we first established CSICOP we did not realize we would elicit such an intense response from the scientific community or the public.

In no small measure, the epidemic of paranormal beliefs is due to the rapid emergence of the mass media on a global scale. These media have virtually replaced the schools, colleges, and universities as the chief conveyors of information. The days of the lone scientist conducting research in the lab or of the isolated scholar writing a paper or book for a limited audience have been bypassed. Today new ideas are popularized—whether half- or fully baked—and they are broadcast far and wide even if they have not been sufficiently tested. Apparently the chief interests of most media conglomerates are entertainment rather than information, profit rather than truth, selling products rather that contributing to the sum of human knowledge. Accordingly, paranormal ideas are pandered to a gullible public and the line between fiction and reality is blurred. Psychic wonders, angelic visitations, Virgin Mary sightings, satanic infestations, weeping icons, miraculous cures, prophetic visions, and other paranormal phenomena are exhibited and marketed along with cereal, chewing gum, cold remedies, and laxatives. The public is often confronted with sensational accounts of hidden realms, and pseudoscience is mistaken for genuine science. Even reputable publishers prefer to publish books touting paranormal claims rather than dispassionate scientific critiques. Why is it that of the thousands of pro-astrology, pro-psychic, or pro-UFO books published, very few (other than those published by Prometheus Books) are skeptical? "They don't sell," is the response of the hallelujah choir within the publishing industry—a sad commentary on our times.

The skeptics thus have a vital role to play: to educate the public about the nature of science and to attempt to persuade media producers and directors that they have some responsibility to develop an appreciation for scientific rationality. One of the roles of CSICOP is to challenge the views of pseudoscience pouring forth daily from the media. It is clear that we cannot operate within the cloistered confines of the academy, but need to enter into the public arena. In monitoring the media, we surely have not sought to censor producers or publishers; we only wish for some balance on their part in presenting paranormal claims, and for some role for skepticism about these claims. Largely because of the media, large sectors of public opinion simply assume that psychic powers are real (clairvoyance, telepathy, precognition), that it is possible to modify material objects merely by the mind (psychokinesis), that psychics can help detectives solve mysteries, that we can abandon the clinical tests of medical science and heal patients by miraculous means, and that the Earth is visited daily by extraterrestrials who are engaging in sexual biogenetic experiments with humans. The number of paranormal, occult, and sci-fi television programs is increasing. Our objection is that "docudramas" are not labeled as fictionalized accounts but touted as fact. In regard to the many talk shows that constantly deal with paranormal topics, the skeptical viewpoint is rarely heard; and when it is permitted to be expressed, it is usually sandbagged by the host or other guests.

After two decades of toiling in the paranormal marshes, I am persuaded that what we are dealing with in the public is a *quasi-religious phenomenon.* Belief in the paranormal is the poetic equivalent of religion. We live in a culture where any criticisms of the uncorroborated claims of religions are generally considered to be ill-advised or in bad taste. The New Age spirituality that has developed is drenched in occult and paranormal symbols—from near-death experiences to extraterrestrial abductions, from past-life regressions to miraculous healings. This is consistent with the vague religiosity now regnant in modern culture, and especially American society. The popularity of the paranormal worldview, I submit, is a manifestation of what I call the *transcendental temptation,* the tendency of human beings to wish to penetrate the hidden depths of an alleged transcendental reality that cannot be known by using the methods of scientific inquiry. In my view this is a reversion to primitive forms of magical thinking. That is why it is often so difficult to cope with paranormal beliefs, for we are dealing with faith and conviction, not testable theories or hypotheses. This perhaps explains why there is often so much animosity toward science in large sectors of the population, and why antiscientific irrationalism at times overwhelms the dispassionate standards of scientific inquiry. Too many people find the scientific attitude too demanding and rigorous; they want something easier to ingest.

Modern science and technology have transformed the globe and have vastly improved the standards of living and health of large sectors of the population in those societies where it has been applied. Those of us committed to the scientific outlook do not wish to abandon its programmatic goals; we wish to continue to use the methods of science and technology to understand nature and solve human problems. We are willing to suspend judgment about the claims of new forms of reality until they

have been tested; they should at least be falsifiable and they need to run the gauntlet of peer review and replication. In this postmodernist age of nihilistic subjectivity, many intellectuals consider this view to be "outdated," and we are criticized for defending the ideals of the Enlightenment. They reject the view that the methods of science and critical thinking are the most effective procedures for testing truth claims and resolving human problems. We maintain that where the methods of science have been used, they have been eminently successful, and we wish to extend these methods to other areas. The methods of science—measured on a comparative scale with intuition, faith, emotion, and metaphysics—though not perfect, seem to us the best way to gain reliable knowledge.

The *new skepticism* that we defend is positive and constructive, not negative. It is a powerful tool, an indelible part of the process of scientific inquiry. We insist that we need to keep an open mind about all claims to truth, including our own. It is important to point out that unlike many forms of classical skepticism, we do not deny the possibility of knowledge. We believe that there is a body of reliable knowledge that has developed. When we say we are skeptical, we simply demand that objective criteria for evaluating truth claims be respected in a community of inquirers, and rigorous standards be applied not only for evaluating claims on the borderlands of science, but within the entire range of scientific investigations.

The frontiers of science are forever expanding, and this means that we constantly have to be prepared to revise our theories. But the fact that our theories and hypotheses change should not be a cause of despair or uncertainty. The fact that we cannot make absolute or final judgments does not mean that we cannot make any judgments: we insist we still have a body of tested beliefs, and these tell us something about the nature of the expanding evolutionary universe and the place of the human species within it.

Critics maintain that the above account of the universe—based on our reading of the natural, biological, and behavioral sciences—all too often is excessively *naturalistic* or materialistic, and that it leaves little or no room for spiritual, occult, or paranormal realms. I personally accept the naturalistic interpretation of the universe. However, in being committed to the scientific outlook, I do not deny the vital importance of human creativity in life, or the significance of passions, feelings, and other dimensions of human experience, but I would insist that in searching for testable hypotheses these dimensions are not relevant. Some may choose to reject this interpretation. I respond that if we are to abandon the methods of objective inquiry we need to have good reason and evidence to do so.

The defining characteristic of the new skepticism is that we use objective methods to establish truth claims as nearly as we can and whenever they are applicable. This does not mean that we are opposed to the sense of wonder. The great scientific discoveries of the past four centuries have expanded the boundaries of our understanding. As spacecraft probe our solar system and the galaxies beyond on the macro level, or penetrate the micro level of inanimate and organic matter, we discover hitherto unknown dimensions. Our chief caveat is that intuitive or speculative theories need to be corroborated by valid inference and experimental confirmation.

Not all of those who enthusiastically consult the SKEPTICAL INQUIRER or the *Skeptical Briefs,* or who draw upon CSICOP for the expertise of those associated with it, will accept this broader naturalistic interpretation of the sciences. We are not asking them to do so; yet they may find our unraveling of crop circles, spoon-bendings, spontaneous human combustion, or poltergeists helpful. Our work draws upon the interdisciplinary efforts of many researchers; and rather than depending on the so-called experts in fields such as astrology or UFOlogy, as the case may be, many find the work of the skeptical movement highly instructive in specific areas of interest. In maintaining that the broader interpretation of our world is naturalistic, I have no doubt entered the controversial domain of the philosophy of science, and in this age of intense specialization, many may not choose to take that step.

Future Prospects

I have briefly reviewed how far we have come in these past twenty years. The question is, Where do we go from here? I would suggest that our work has only just begun, and that there is a continuing need in contemporary culture for the skeptical movement. Would that we *could* go out of business! Alas, there are always new claims, many often more bizarre or outrageous than previous ones (like the "alien autopsy" or "milk-drinking statues"), that emerge and cry out for examination.

Our task in the future will be to continue to function as Socratic gadflies. This is vital, and it means that scientific skepticism should be applied to borderland questions. It means that we need to keep alive our probing critical methods—no matter how much they may infuriate those whom we criticize. But we need to continue to develop in the public an understanding and appreciation for scientific inquiry and the scientific outlook. Our role in this sense is primarily *educative.* CSICOP and the newly developed Center for Inquiry have taken upon themselves this important task.

In the future, we must seek new ways to bring this critical point of view to the general public. We sometimes feel like the lone voice in the wilderness. There are exciting new directions that we plan to take. We believe we have a valuable contribution to make, but we will in the future need to further convince opinion-makers—political and industrial leaders, the directors of corporations, and the masters of the media—that our battle is theirs and that a free and democratic society can survive and prosper only if it keeps alive the appreciation for skepticism and critical thinking. To fulfill this mission in the decades ahead we will need the support of our readers. We are grateful for your loyal help over the past twenty years. We look forward to the challenges of the future, and will continue to serve you. □

Thomas Edison, Paranormalist

Thomas Alva Edison (1847–1931) was the world's most famous, most prolific, inventor. I will spend little time on biographical details because they are easily found in encyclopedias or in the more than sixty books about Edison. Nor will I be concerned with whether his 1,093 patents are all to be credited to his undisputed genius or to the work of many assistants. It has been said that his greatest invention was the invention factory, or research team. Many of his inventions were improvements on earlier work by others. (*Most* inventions are.) The incandescent light bulb, for example, had a long history before Edison found better filaments. His one great, indisputably original, invention was the phonograph.

This also is not the place to discuss Edison's foibles: his temper tantrums, his lust for money, his efforts to purloin ideas, his boasts about war weapons that never existed, or his disastrous relations with his two wives and his children. These are aspects of Edison's character I did not know about when forty years ago I wrote an adulatory article about him for *Children's Digest* (November 1954).

My intent here is to focus on Edison's changing religious opinions, his lifelong interest in psychic phenomena, and his gullibility. My main sources are two biographies—Robert Conot's *Thomas A. Edison: A Streak of Luck* (1979) and Wyn Wachorst's *Thomas Alva Edison: An American Myth* (1981)—and the chapter on Edison in Martin Ebon's *They Knew the Unknown* (1981).

In his youth Edison was an outspoken freethinker. He greatly admired Thomas Paine's *Age of Reason,* but unlike deist Paine, Edison did not believe in God, the soul, or an afterlife. At that time Edison was a pantheist who liked to call nature the "Supreme Intelligence," indifferent and merciless toward humanity. His friend Edward Marshall interviewed him for the *New York Times* (October 2, 1910). "There is no more reason to believe that any human brain will be immortal," Edison declared, "than there is to think that one of my phonograph cylinders will be immortal. . . . No, the brain is a piece of meat mechanism—nothing more than a wonderful meat mechanism."

Edison's words, occasioned by the death of William James, generated an uproar of opposition from Christians of all stripes. He was soundly trounced by Cardinal Gibbons. *Columbian Magazine,* a Catholic periodical, devoted an entire issue to attacking what it called "Edison's materialism."

Then something happened to Edison on the way to his laboratory. In an interview titled "Edison Working on How to Communicate with the Next World," in *American Magazine* (October 1920), B. C. Forbes—he later founded *Forbes* magazine—revealed that Edison not only had come to believe in an afterlife, but was actually working on an electrical device for communicating with the dead! (See also Austin Lescarboura's "Edison's Views on Life after Death," in *Scientific American,* October 30, 1920.)

Nothing is known about the kind of machine Edison had in mind, although it is known that he conducted experiments with it. It was probably some sort of telephone using greatly amplified electromagnetic waves.

Martin Ebon quotes the following remarks made by Edison to the *Scientific American* interviewer:

> If our personality survives, then it is strictly logical and scientific to assume that it retains memory, intellect, and other faculties and knowledge that we acquire on this earth. Therefore, if personality exists after what we call death, it's reasonable to conclude that those who leave this earth would like to communicate with those they have left here.
>
> . . . I am inclined to believe that our personality hereafter will be able to affect matter. If this reasoning be correct, then, if we can evolve an instrument so delicate as to be affected, or moved, or manipulated . . . by our personality as it survives in the next life, such an instrument, when made available, ought to record something.
>
> Certain of the methods now in use are so crude, so childish, so unscientific, that it is amazing how so many rational human beings can take any stock in them. If we ever do succeed

Fund for the Future

C S I C O P A T T H E C E N T E R F O R I N Q U I R Y

With the completion of its headquarters campus, The Committee for the Scientific Investigation of Claims of the Paranormal is poised for an explosion of growth. We appeal for your help in assuring adequate funding—now and in the future—for the bold initiatives that will shape the outreach of science and reason in the years to come.

To carry out its objectives in the second half of this decade, CSICOP has formulated specific program and project goals.

1) Critical Thinking / Science Education
The Committee proposes to develop new materials—ranging from publications to audio and video cassettes and instructional courseware—to disseminate broader and more accurate knowledge about scientific methods and to teach improved critical thinking skills.

2) Media Watch / Rapid Response
The Committee proposes to equip itself to be able to monitor major media on a continuing basis, and to be able to respond to claims quickly. This will entail additional staffing for continuous media monitoring, establishment of an e-mail network to permit rapid formulation of responses by qualified experts, and development of e-mail, FAX broadcast, and other capabilities to assure instantaneous dissemination of our statements to local, national, and world media.

In addition, the Committee plans to step up its production of audio and video materials through Inquiry Media Productions. Targets include sequels to the successful public education video Beyond Belief, talking books, a radio op-ed series, and a new public affairs series for public radio. Full implementation will require additional staffing and significant investments in production and distribution equipment.

3) The Institute for Inquiry
The Committee proposes to complete the development of its Institute for Inquiry adult education program. The Institute for Inquiry is already the nation's foremost provider of education on the subjects of skepticism, the scientific method, and the critical evaluation of paranormal and fringe science claims. Hundreds of persons have attended Institute for Inquiry courses at scores of locations.

4) The Library of Skepticism
With the establishment of the John and Mary Frantz Skeptics' Library in memory of Margaret Frantz at the Center for Inquiry, CSICOP has created a permanent repository to house and maintain the world's literature about the scientific analysis of paranormal claims—and to make it accessible to scholars and other qualified users.

CSICOP at the Center for Inquiry,
Box 703, Amherst, N.Y. 14226
(716) 636-1425

> in establishing communication with personalities which have left this present life, it certainly won't be through any of the childish contraptions which seem so silly to the scientist.

Christian leaders here and abroad welcomed Edison into their ranks as a theist who now believed in immortality. *Scientific American,* in the article cited earlier, ran a photograph of Edison pouring liquid from a flask into a beaker. The caption read: "Thomas A. Edison—the world's foremost inventor—who is now at work on an apparatus designed to place psychical research on a scientific basis."

Although Edison never became a Christian, Mina Miller, his young and pretty second wife (she was eighteen years his junior), never wavered from her devout Methodist upbringing. Conot (page 427) calls her "an unreconstructed fundamentalist who . . . thought evolution a plot of Satan." I had the pleasure of meeting her when I was a small boy. My parents had taken me to Chautauqua, New York, where the Edisons maintained a summer cottage. I rang their doorbell to ask for the great man's autograph. He was not at home, but Mrs. Edison graciously promised to have him send it to me, which he did.

"Has Man an Immortal Soul?," another interview by Marshall, appeared in the *Forum*'s November 1926 issue. Edison now speaks of the "soul," and refers to God as both a "Great Power" and a "Creator." "Today the preponderance of probability greatly favors belief in the immortality of the intelligence, or soul, of man," Edison said. He praises Christianity as the wisest and most beautiful of world religions, seeing it as evolving toward a faith with less emphasis on doctrines and more on the moral code of Jesus. Theologians should stop debating creeds, Edison emphasized, and devote more time to "pile up the evidence . . . which no fool skeptic can demolish."

In later interviews that produced newspaper headlines around the world, Edison conjectured that the human mind was composed of billions of infinitesimal particles that are responsible for intelligence and memory. He thought they came from outer space, bringing wisdom from other inhabited planets. After we die, they may disperse, or they may swarm like bees and enter other human skulls, he said. Edison liked to call his particles "little people." Occasionally, he said, they get into conflict with one another. Here is how he put it in his diary:

> They fight out their differences, and then the stronger group takes charge. If the minority is willing to be disciplined and to conform there is harmony. But minorities sometimes say: "To hell with this place; let's get out of it." They refuse to do their appointed work in the man's body, he sickens and dies, and the minority gets out, as does too, of course, the majority. They are all set free to seek new experience somewhere else.

"A firm believer in PK (psychokinesis), he tried to start pendulums swinging with mind control."

Edison was fascinated throughout his long life with the occult. In his thirties he became intrigued by the writings of that amusing mountebank Madame Helena Petrovna Blavatsky, the great guru of theosophy. Edison attended meetings in New York of the theosophical society and was awarded some sort of diploma. A firm believer in PK (psychokinesis), he tried to start pendulums swinging by mind control, but the results were negative. He also attempted to confirm telepathy by experiments with electric coils around the heads of human receivers and transmitters. Ebon quotes from Edison's diary: "Four among us first stayed in different rooms, joined by the electric system. . . . Afterwards we sat in the four corners of the same room, gradually bringing our chairs closer together toward the center of the room, until our knees touched, and for all of that, we observed no results."

It was Edison's good friend Henry Ford who introduced Edison to the magician Berthold Reese (1841–1926), better known as Bert Reese. He was a fat, bald-headed little man with pop eyes and a round face like a cherub. Born in what is now Poland, "Dr." Reese, as he liked to call himself, traveled widely around Europe performing what magicians call "mental magic" for celebrities and royalty. He liked to wear on his tie a huge diamond pin given to him by the King of Spain, and an even larger diamond on a finger ring. Many leading parapsychologists believed he had extraordinary psi powers.

Reese specialized in what is called "billet reading." He would ask someone to write something on a piece of paper, which he would fold and either hide or destroy. Reese would then pretend to read the message by ESP. His methods were well known to honest magicians of the time. There are scores of ways to accomplish billet reading.

Houdini was so impressed by Reese's skill that in a letter to Conan Doyle (April 3, 1920) he said that Reese "is without doubt the cleverest reader of messages that ever lived." Houdini urged Doyle to have a "séance" with Reese if he ever visited New York City where Reese was then living, to see if "you can fathom his work."

In his book *Paper Magic* (page 91) Houdini refers to Reese in a footnote as "in my estimation, the greatest pellet reader that ever lived. (A pellet is a billet rolled into a ball.) I had a séance with Dr. Reese, and if it had not been for my many years of experience as an expert, I might have been mystified by his adroit manipulations and uncanny deductions."

Edison was the most famous person to be totally bamboozled by Reese. Like so many scientists who tumble for psychic charlatans, Edison considered himself far too intelligent to be fooled, and of course it never occurred to him to seek explanation from a magician. When an article in the *New York Graphic* unveiled some of Reese's techniques, Edison was furious. He sent the

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Martin Gardner's latest book is The Night Is Large: Collected Essays 1938–1995 *(St. Martin's Press, 1996).*

newspaper a letter in which he said:

> I am certain that Reese was neither a medium nor a fake. I saw him several times and on each occasion I wrote something on a piece of paper when Reese was not near or when he was in another room. In no single case was one of these papers handled by Reese, and some of them he never saw, yet he recited correctly the contents of each paper.
>
> Several people in my laboratory had the same kind of experience, and there are hundreds of prominent people in New York who can testify to the same thing.

Houdini wrote to Doyle on August 8, 1920:

> You may have heard a lot of stories about Dr. Bert Reese, but I spoke to Judge Rosalsky and he personally informed me that, although he did not detect Reese, he certainly did not think it was telepathy. I am positive that Reese resorts to legerdemain, makes use of a wonderful memory, and is a great character reader. He is incidentally a wonderful judge of human beings.
>
> That he fooled Edison does not surprise me. He would have surprised me if he did not fool Edison. Edison is certainly not a criterion, when it comes to judging a shrewd adept in the art of pellet-reading.
>
> The greatest thing Reese did, and which he openly acknowledged to me, was his test-case in Germany when he admitted they could not solve him.
>
> I have no hesitancy in telling you that I set a snare at the séance I had with Reese, and caught him cold-blooded. He was startled when it was over, as he knew that I had bowled him over. So much so that he claimed I was the only one that had ever detected him, and in our conversation after that we spoke about other workers of what we call the pellet test—Foster, Worthington, Baldwin et al. After my séance with him, I went home and wrote down all the details.

The letters are quoted from *Houdini and Conan Doyle: The Story of a Strange Friendship* (1932), by Bernard Ernst and Hereward Carrington. Joseph Rinn, in *Sixty Years of Psychical Research* (1950), has a good description of one of Reese's billet reading performances, with an explanation of how he did it.

The best account of Reese's methods is "Bert Reese Secrets," by magician Ted Annemann, in the 1936 Summer Extra issue of his periodical, *The Jinx.* It includes a photograph of Reese, his hand holding a cigar that he habitually smoked during his performances because it made it easier to palm a folded billet. Annemann writes that Harvard's distinguished German-born philosopher and psychologist Hugo Münsterberg (1863–1916) "became such a believer in Reese's powers that he was preparing a book on him when death prevented its finish." I was unable to verify this. Like his friend William James, Münsterberg believed in both God and immortality, but unlike James he was a well-known skeptic of the paranormal who had a great record of exposing mediums and other psychic charlatans by carefully contrived traps. Can any reader shed light on Annemann's startling claim?

There is evidence that Edison thought he himself had ESP. At any rate, there is no question that his powers of precognition were poor. Here are some of his failed predictions that I found in *The Experts Speak* (1984), an amusing anthology by Christopher Cerf and Victor Navasky, and elsewhere:

"The talking motion picture will not supplant the regular silent motion picture. . . . There is such a tremendous investment in pantomime pictures that it would be absurd to disturb it." (*Munsey's Magazine,* March 1913.)

"It is apparent to me that the possibilities of the aeroplane, which two or three years ago was thought to hold the solution to the [flying machine] problem, have been exhausted, and that we must turn elsewhere." (*New York World,* November 17, 1895.)

"The radio craze . . . will die out in time so far as music is concerned. But it may continue for business purposes." (Quoted by Conot in his biography of Edison, page 424.)

"Sammy, they will never try to steal the phonograph. It is not of any commercial value." (Edison to Sam Insull, an assistant, as quoted by Conot, page 245.)

"In fifteen years, more electricity will be sold for electric vehicles than for light." (Quoted in *Science Digest,* February 1982.)

Edison's worst prediction had to do with what was called the "war of the currents." Nikola Tesla and others believed that alternating currents were the best way to transmit high voltage electricity over long distances. Edison stubbornly insisted that only direct current should be used. "There is no plea which will justify the use of high-tension alternating currents, either in a scientific or a commercial sense. They are employed solely to reduce investment in copper wire and real estate. . . . My personal desire would be to prohibit entirely the use of alternating currents. They are as unnecessary as they are dangerous. . . . (I quote from David Milsted's article "Even Geniuses Make Mistakes," in *The New Scientist,* August 19, 1995.)

Edison's influence on science fiction is covered in the entry "Edisonade," in the *Encyclopedia of Science Fiction* (revised edition, 1995), edited by John Clute and Peter Nichols. The literature starts with the Tom Edison, Jr., sequence of dime novels, by Edward Ellis. Edison is also portrayed as a character in a French novel, *Tomorrow's Eve* (1886), by Villiers de L'isle Adams, and in Garrett P. Serviss's *Edison's Conquest of Mars* (1898). For more recent references consult the *Encyclopedia of Science Fiction.*

In the introduction to his book, Conot sums up his opinion of Edison this way:

> The Edison that I discovered was a lusty, crusty, hard-driving, opportunistic, and occasionally ruthless Midwesterner, whose Bunyanesque ambition for wealth was repeatedly subverted by his passion for invention. He was complex and contradictory, an ingenious electrician, chemist, and promoter, but a bumbling engineer and businessman. The stories of his inventions emerge out of the laboratory records as sagas of audacity, perspicacity, and luck bearing only a general resemblance to the legendary accounts of the past. □

Ghostly Photos

A rash of new "ghost" photographs is plaguing the Western world.

I first became aware of the mysterious phenomenon when I received a call at my office at the Center for Inquiry. It was from a Lockport, New York, couple who were experiencing some spooky occurrences and were concerned about their young children. The most unusual phenomenon, they said, was found in their color snapshots. Although they had seen nothing at the time the photos were taken, each contained strange, unusually white shapes the couple could not explain (see Figures 1 and 2).

Similar pictures were taken by another couple. They had appeared with me on "The Danny Show" (where they presented UFO video sequences). Afterward, discovering I had written a book they praised, *Camera Clues: A Handbook for Photographic Investigation* (1994), they gave me some snapshots that puzzled them. Looking at them later I recognized a few that had similarities to the photos that the first couple had taken. A note on one indicated it had been made in Mexico and was similar to a photo in *Fate* magazine.

Naturally, the notation led me to the October 1995 issue of *Fate,* which featured a nationwide ghost photo contest. It was (to quote Yogi Berra) déjà vu all over again! Beginning with the Grand Prize Winner's photo (Figure 3), mysterious strandlike forms "infected" all six winning photos. Citing my book, *Camera Clues,* at the end, the accompanying *Fate* article explained how some of the ghost effects in the photos that the editors had received were due to such causes as film-processing errors, lens flares (caused by interreflection between lens surfaces), and outright hoaxes. What was left, they opined, were a few pictures that "may represent an ectoplasmic energy or kinetic energy often associated with the presence of a ghost; however, experts tell us that kinetic energy can be related to a living being as well" (*Fate* Ghost Contest 1995).

Figure 1 (above) and **Figure 2.** "Ghostly" forms in photos like these made by a New York State couple are becoming common.

Yet again, the strandlike forms appear in a British photo in Jane Goldman's *The X-Files Book of the Unexplained* (1995, reviewed in *SI,* May/June 1996). Goldman's caption suggests the white shape is a ghost; "Or is it fogged film?" Goldman asks in a moment of doubt.

Actually it is neither. I learned the source of the ghostly phenomenon when the first young couple visited my office and, at my request, brought their camera and film for me to keep for a few days. Examination of the negatives revealed nothing remarkable, but by the next day I had the answer: the strand- or looplike form was caused by the new subcompact camera's hand strap getting in front of the lens. Since this type of camera's viewfinder does not see what the camera sees (as it does in a single-lens reflex type camera), the obtruded view goes unnoticed. Although such camera straps are typically black and photograph black (or dark) in normal light, their sheen enables them to brightly reflect the flash from the camera's

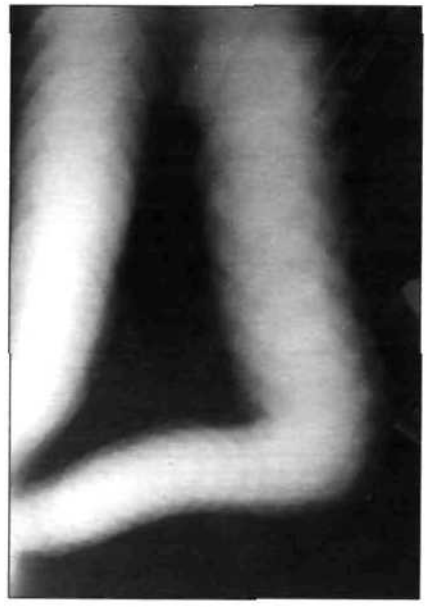
Left: **Figure 3.** Grand Prize-winning photo featured in *Fate* magazine's ghost photograph contest was made by Marilyn Bolduc, Sanford, Maine. (Published by permission.)

Below: **Figures 4, 5, and 6** (clockwise). Experimental photographs by the author reproduce similar ghostly effects.

self-contained flash unit.

Some of my experimental snapshots are shown in Figures 4-6. The braiding of the strap can even be seen. When the cord is quite close to the lens, the result is softer, more mistlike. It follows that analogous effects could occur if other articles were placed before the lens—either deliberately or inadvertently. For example, flash-reflected hair, jewelry, articles of clothing, or the like could produce distinctive effects that might not be easily recognized.

It is instructive to note that in each of the cases I have related, including the six examples in *Fate* magazine, no one saw anything out of the ordinary but simply discovered the anomalous shapes when the photos came back from the film processors. As I point out in *Camera Clues,* that situation is a good indication that the paranormal phenomenon in question—ghost, UFO, or other entity—is really only some sort of photographic glitch caused by camera, film, processing, or other element. In this case, a new type of camera was the culprit in a rash of allegedly supernatural pictures.



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SPECIAL REPORT

Science or Pseudoscience? Pentagon Grant Funds Alternative Health Study

$355,225 was awarded for a 'laying over of hands,' Therapeutic Touch study at the University of Alabama at Birmingham.

CARLA SELBY and BÉLA SCHEIBER

Consider the following: A major public university's burn center requests a grant for $317,725 from the Uniformed Services University of the Health Sciences (USUHS) (a department of the Pentagon) in order to study the "laying over of hands," or "The Effect of Therapeutic Touch on Pain and Infection in Burn Patients." One might be skeptical about the topic to be investigated and therefore not surprised that the grant was rejected. Now assume that this same university resubmitted the grant proposal revised in accordance with the suggestions of USUHS and two months later was awarded a grant of $355,225.

And, in fact, that's what happened: $355,225 was awarded September 20, 1994, to the University of Alabama at Birmingham (UAB) Burn Center for a "single blinded randomized clinical trial" to "quantify the effect of therapeutic touch (TT) on pain and infection in burn patients, and to develop a research-based protocol for practice. A comparison will be made between the control group which will receive placebo intervention (mimic TT) along with the standard treatment regimen, and the experimental group will receive TT in addition to usual burn center management."[1]

During the experiment, a group of burn patients—suffering from first-, second-, and third-degree burns on anywhere from 5 percent to 70 percent of their bodies—will have a nurse's hands waved over them without touching (which should relieve any anxiety about exacerbation of pain on the part of burn patients) to see if the patient is helped. This group of patients will be compared with a control group of burn patients—selected by a coin toss—who are denied the benefit of a trained practitioner's TT, but who instead get a wave of the hands from a nurse who has been trained in how to fake therapeutic touch.

Of course, a skeptic might ask, "What's the difference between waving your hands over a patient's body hoping to help heal him or her and *pretending* to wave your hands over a patient's body hoping to help heal him or her?" Another question might be, "What if the mimic TT practitioner feels compassion for the burn patient and accidentally performs actual TT?" How would that affect the results of the study? Granted, the UAB Burn Center deals with burn victims, but if the USUHS was going to reject the first proposal and make suggestions, why didn't they suggest that the practitioners start with a group of subjects suffering from less trauma? For example, people with mild sunburn?

The proposal "is designed to investigate the effects of a complementary therapy."[2]

The "specific objectives" of the project are to:

- Recruit 150 subjects aged 15 to 65 and randomly assign them to either the treatment or control group.
- Compare the effects of TT on the outcomes of pain perception and

nosocomial infection.
- Develop and test a TT protocol for use as an adjunct to narcotic analgesia in lowering pain levels and the incidence of infection in burn patients.[3]

Apparently, no one at USUHS raised concerns about the the less-than-scientific and extremely imprecise language used in the grant proposal to describe TT and support the request. Language such as:

- Therapeutic touch is a contemporary interpretation of several ancient healing practices.
- The technique . . . is based on the assumption of a human energy field which extends beyond the skin. The idea behind TT is that the human energy field is abundant and flows in balanced patterns in health but is depleted and/or unbalanced in illness or injury.
- This action is believed to place the person in an optimal position for his/her own resources to be used in self-healing.
- In this view, the therapist acts as a human energy support system until the person's own immunological system is robust enough to take over.
- Central to the practice is the assumption of a human energy field and an environment filled with 'life energy' which is also present in all living organisms.
- Support for this view is based entirely on a field world view.
- Quantum theory states that all of reality is made up of energy fields and that over 99% of the universe is simply space.
- Our present technology does not allow the measurement of the human energy field, but to a trained sense, primarily touch, the human energy field can be perceived and assessed.[4]

One might well ask, "Doesn't that last point actually negate the practice of therapeutic touch, which involves no touching? And what was that bit about quantum theory all about?" The proposal goes on: "It is postulated that TT, which therapeutically manipulates the individual's energy pattern, stimulates the release of endorphins through the triggering of supraspinal mechanisms."[5]

Perhaps the people at USUHS were impressed by the diagram of the Conceptual Model of Study that accompanied the proposal. The diagram (reproduced on the next page) shows that burn injury causes "pain," "stress," and "risk of infection." TT, on the other hand, leads to "activation of endogenous opioid system," "reduced stress," and "decreased T-suppresor (*sic*) lymphocytes," which in turn lead to "pain relief" and "decreased risk of infection," which together lead to "enhanced healing."[6] Of course, the existence of a human energy field as well as the benefits of TT are all hypothetical. Their efficacy is the purpose of the study, after all. Unfortunately, the continued assumption of the validity of the theoretical basis of TT is to be found throughout the proposal without any comment about this logical fallacy on the part of the proposal's reviewers.

"During the experiment, a group of burn patients—suffering from first-, second-, and third-degree burns on anywhere from 5 percent to 70 percent of their bodies—will have a nurse's hands waved over them without touching . . . to see if the patient is helped."

Among other criteria for selecting the subjects are the necessity of speaking English and the ability to communicate verbally. The subjects must also be able to see and hear. One might wonder if the patients need to be able to see and hear so that they will be aware when either TT or mimic TT is being administered. However, this requirement is putatively added in order to determine if the TT was effective and if the mimic TT was not effective. Why? Because the results are measured by *asking* the patients if they feel better!

The proposal says the following "instruments" will be used in this study to collect data relative to outcome variables:

1. McGill Pain Questionnaire (which consists primarily of three major classes of word descriptors: sensory, affective and evaluative, and is used to specify the subjective pain experience);
2. Visual Analogue Pain Estimation Scale (which is used by having the patient mark or indicate a point on a straight line that reflects the amount of sensation the patient is experiencing at the time);
3. Visual Analogue Anxiety Estimation Scale (which is used by having the patient mark or indicate a point on a similar straight line that reflects the amount of anxiety the patient is experiencing);
4. Credibility of Therapy Form (which is used after an explanation of TT to record the patient's opinion as to how logical TT seems, how confident the patient is that TT will be successful, and if the patient would be willing to pay for TT as an optional part of hospital treatment).[7]

The names of patients who answer "yes" to that last question ought to be valuable information to somebody!

The grant proposal isn't afraid to reveal the secrets of TT by describing how it works: "The TT practitioner will begin by centering" which "consists of a quieting and focusing of consciousness with the intent to help. Next, an assessment of the subject's energy field will be done to search out all areas of imbalance, blocked energy flow, congestion, or deficit in energy flow. Then TT treatment will begin, starting at the subject's crown and moving downward to the feet . . . through stimulation and augmentation, clearing of congestion or blocks in flow, or quieting the energy flow to achieve a balanced, abundant, symmetrical energy flow. The TT practitioner's hands, held about four inches above the subject, will move in a rhythmical way directing energy from central areas of the subject's energy field to peripheral ones or touching the subject lightly for short periods where additional energy is

Carla Selby is special projects director for CSICOP Center for Inquiry–Rockies and a board member of the Rocky Mountain Skeptics. Béla Scheiber is executive director of the Center for Inquiry–Rockies and president of the Rocky Mountain Skeptics.
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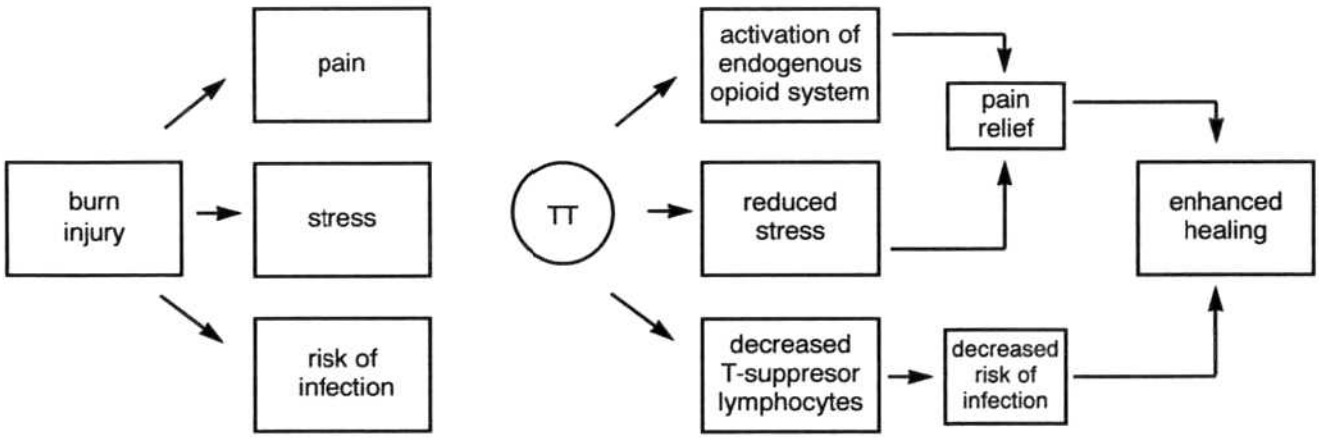

Diagram from original grant proposal that purports to show how the use of Therapeutic Touch can result in 'enhanced healing' *for burn victims.*

needed."[8] Contrast this precision methodology with TT's exceedingly imprecise origin in Martha Rogers's ". . . nursing theory . . . based entirely on a field world view . . ."[9] which has far more in common with revealed wisdom than with a scientific hypothesis.

An ongoing assessment by the practitioner will indicate when the treatment is completed. At the conclusion of this process, the subject will be allowed to rest quietly for about 10 minutes. It is implied therefore that the subject needs this time of quiet rest at the end of TT treatment in order to recover from all the agitation caused by the practitioner's waving hands.

On the other hand, the placebo intervention of the mimic TT administered to the control group will be completely different:

> Mimic treatments will be provided to all control group subjects by the non-nurse research assistant, who does not know what Therapeutic Touch is. This research assistant will be trained to perform the same movements that will be used by the Therapeutic Touch practitioners. However, instead of centering and holding the intent to help the subject as the Therapeutic Touch practitioners will do, the research assistant will simply begin the treatment and will count back from 100 by serial sevens during the mimic treatment.
>
> To assure that the sessions are all comparable, three uninvolved lay persons will be asked to observe the research assistants and the Therapeutic Touch practitioners and identify which treatments are real. The research will not be started until observers cannot tell the real from the mimic treatments.
>
> Mimic treatments will be given in the patients' rooms approximately one hour before the daily dressing change. As in the Therapeutic Touch treatment, the patients will lie on their backs on the hospital beds. Lighting will be dim, and soft, relaxing instrumental music will be playing. Prior to the first treatment, the subject will be instructed to relax as fully as possible and a brief explanation of what will be done during the treatment will be given. The research assistant may randomly spend between five and twenty minutes doing the mimic treatment. At the end of the mimic treatment, the subject will be allowed to rest quietly for about 10 minutes. Thus, with this single, blind placebo intervention, all subjects and unit personnel will perceive that subjects are receiving the same intervention. The identity of the mimic TT vs. TT intervention subjects will be known only to the researchers.[10]

The proposal attempts to address some "limitations" of its study: "A frequent criticism when TT administration is used as an intervention relates to the 'placebo effect.' However, administration of a mimic intervention to control subjects helps control for placebo effect."[11] In other words, a placebo treatment for a possible placebo treatment will take care of that problem!

In considering the success that the UAB Burn Center had in acquiring $355,225 to study TT, we ask whether public money is best spent on such highly speculative "alternative therapies." What is the difference, after all, in TT and "remote healing" where practitioners *will* patients to get better from across the room, or perhaps, over the phone. (What about E-mail?)

Further, should questions not be asked about the ethics of trying a completely speculative technique on burn patients whose pain is most severe and intractable and whose infection rate is very high? First and most important, practitioners of TT must demonstrate some basis in reality for their theory. Then, and only then, can they move to the next step—proving its efficacy.

Notes

1. Grant No. MDA 905-94-Z-0080. Uniformed Services University of the Health Sciences. Project Title: The Effect of Therapeutic Touch on Pain and Infection in Burn Patients (N94-020A1), p. 35. Awarded to: University of Alabama at Birmingham. Principal Investigator: Joan G. Turner. Award amount: $355,225. Period of Award: 9/15/94 through 9/30/95. (Due to the unwillingness of UAB to provide us a copy of this grant proposal, we obtained it through a Freedom of Information Act request.)
2. Ibid.
3. Ibid.
4. Ibid., p. 40.
5. Ibid., p. 42.
6. Ibid., p. 45.
7. Ibid., p. 47.
8. Ibid., p. 49.
9. Ibid., p. 40.
10. Ibid., p. 52.
11. Ibid., p. 52. □

Traditional Medicine and Pseudoscience in China: A Report of the Second CSICOP Delegation (Part 1)

In this, the first of a two-part report on a 1995 CSICOP delegation to China, the authors discuss the historical rationale for Traditional Chinese Medicine (TCM), its involvement with the questionable Qigong movement, and the growing importation to the West of these practices by Western practitioners of "alternative medicine." They present their observations of how TCM is practiced at the major TCM facility in Beijing and describe their visit to China's preeminent neurophysiology lab studying the neurochemical underpinnings of acupuncture effects.

BARRY L. BEYERSTEIN and WALLACE SAMPSON

In 1988 the first CSICOP delegation to China looked into the claims of several Qigong (pronounced *chee-gung*)[1] masters and their young proteges. These child marvels supposedly possessed what Chinese admirers call "special ability" or "extraordinary functions of the human body." They were said to be able to alter the shape or color of objects in sealed containers and perform a host of other minor miracles. What the first CSICOP delegation (composed of most of the Executive Council at the time) found was that these children could not produce their effects under

close observation. In short, the whiz kids and their masters were performing unsophisticated conjuring tricks (Alcock et al. 1988). Also, in controlled tests, the delegation found the vaunted abilities of the Qigong masters to diagnose medical ailments to be unsubstantiated.

Despite such failures, medical uses of Qigong have continued to gain popularity in China. Along with other facets of Traditional Chinese Medicine (TCM), it has become increasingly fashionable in the West as well. Most observers consider TCM's growing reputation in China in the decades following the Communist revolution (takeover in 1949) to have been due primarily to a mix of practical necessity and political expediency on the part of Chairman Mao Zedong. With fewer than 30,000 scientifically trained physicians in all of China (most of them concentrated in the large cities and suffering from politically suspect class backgrounds), the Communist revolutionaries were faced with an immediate need to be seen as "doing something" about the dismal state of medical care in China at the time. With the economy devastated, hard currency almost nonexistent, and hostility emanating from most foreign capitals, the new regime saw little hope of soon being able to afford Western medical technology and pharmaceuticals for a population that was already approaching 600 million. Thus the Communist Party began a concerted effort to convince the masses that TCM, like other aspects of Chinese culture, was not merely equivalent but superior to decadent "imperialist" alternatives. This of course carried the added political bonus of fostering national pride and solidarity among a war-weary and fractionated people.

But while TCM was being touted to the masses by the elites, top party and military officials cynically kept for themselves the best treatments scientific medicine could offer. According to Mao's personal physician, Li Zhisui (Li 1994), Mao himself relied on Western methods to treat his many illnesses (except for a few folk practices carried over from his rural childhood). Trained in scientific medicine at an American-run medical school in China, Li immigrated to Australia after World War II. He was working as a medical officer for an Australian shipping company in 1949 when he was enticed to return to Beijing. Shortly afterward, he was appointed Mao's doctor, the post he held until Mao's death in 1976. Li had no other patients than Mao, Mao's hypochondriacal wife, Jiang Quing, and a few other Mao family members and top party officials. For them, Li had the latest Western drugs, surgical techniques, and medical equipment at his disposal, and a well-equipped portable hospital that accompanied Mao and his entourage on their frequent, impulsive romps around the vast countryside.

Although the health of the masses did begin to improve following the revolution, the herbal remedies, acupuncture, and moxibustion[2] dispensed by Mao's "barefoot doctors" probably contributed much less to the improvement than several phenomenal efforts in the public health sphere (after all, folk medicine had been the only treatment available to the masses up to that time and the state of their health had been far from encouraging). Recruited from the peasantry, the "barefoot doctors" were armed with exhortations from the ubiquitous booklets of Mao's quotations and training roughly equivalent to that of first aid attendants in the West. They organized vast and successful communal health projects. Sanitation facilities and access to safe drinking water were greatly improved and several parasitic epidemics were brought under control. At the same time, the spread of sexually transmitted diseases was contained and greater social stability allowed improvements in diet, perinatal care, and basic immunization (Horn 1976; China Report 1983).

TCM had been the treatment of the Chinese people since ancient times,[3] but having gained Mao's somewhat cynical imprimatur, TCM's leaders began to amass increasing political power in the new China. Western journalists who accompa-

Introduction

Paul Kurtz, Chairman of CSICOP

The Committee for the Scientific Investigation of Claims of the Paranormal has cultivated a long-standing relationship with scientific and skeptical colleagues in China. It began in 1987, when Mr. Lin Zixin, editor-in-chief of *Science and Technology Daily* (China's largest-circulation scientific publication), visited CSICOP's headquarters (then in Buffalo) and invited a delegation to visit China from March 21–April 3, 1988. The SKEPTICAL INQUIRER published three accounts of this significant visit: Paul Kurtz, "Testing Psi Claims in China: Visit by a CSICOP Delegation"; James Alcock, Kendrick Frazier, Barry Karr, Philip J. Klass, Paul Kurtz, and James Randi, "Preliminary Testing" (both Summer 1988); and Paul Kurtz, "The China Syndrome: Further Reflections on the State of Paranormal Belief in China" (Fall 1988).

Since that time, Mr. Lin spent a year in Amherst, New York, and frequently visited CSICOP headquarters and the adjacent Amherst campus of the State University of New York at Buffalo. A Chinese delegation composed of members of China's Popular Science magazine and association visited the United States, and six members of this delegation participated in a CSICOP conference in Dallas and visited skeptical groups in Boulder and Los Angeles.

In an effort to maintain contact, our Chinese colleagues indicated a desire for a third visit. Barry Beyerstein, Wallace Sampson, and Andrew Skolnick made the trip. We are glad to publish the first part of their article below. Part 2 will be published in the next issue.

A delegation of six Chinese researchers are participating in the first World Skeptics Congress in Amherst, New York, in June 1996.

We are also pleased that with this issue we will begin listing two contact groups in China. I should point out that the Chinese have published translations of many articles and books by skeptics. We hope to continue our dialogue.

Barry L. Beyerstein is associate professor of psychology and a member of the Brain Behavior Laboratory at Simon Fraser University (Burnaby, B.C., V5A 1S6, Canada). He is a Fellow and member of the Executive Council of CSICOP. Wallace Sampson is clinical professor of medicine at the Stanford University School of Medicine (Division of Hematology/Medical Oncology, Santa Clara Valley Medical Center, 751 South Bascom Avenue, Santa Clara, CA 95128). He is the board chairman of the National Council Against Health Fraud and a Fellow of CSICOP.

nied Richard Nixon during his historic rapprochement with the Chinese government were intensively courted by the TCM establishment, as were later delegations of Western doctors (China Report 1983; Skrabanek 1985). These delegations were shown major surgery being performed with acupuncture anesthesia. When columnist James Reston required an emergency appendectomy during Nixon's visit, he was widely, though erroneously, believed to have been given only acupuncture as a pain killer during the surgery. It was not until much later that it was revealed that the Chinese surgical patients observed by foreign delegations had been preselected for high pain tolerance and heavily indoctrinated beforehand.[4] It was also disclosed that these demonstration cases were routinely administered surreptitious doses of morphine in an intravenous drip that supposedly contained only hydrating and nourishing fluids (Keng and Tao 1985). In addition, it has since come to light that much of the apparently objective and well-controlled research on TCM emanating from Chinese medical schools during the tumultuous era of the cultural revolution (1966–1976) was falsified at the behest of the hospitals' scientifically unqualified political commissars to ensure that the "research" would support the party line.

Despite this prevarication, most experts today concede that acupuncture does have some analgesic properties (though its potency has been greatly exaggerated). Similarly, many herbal remedies have already been assimilated into scientific medicine.[5] On the other hand, proof for the hyperbole served up by some professors of acupuncture from the TCM institutes Barry Beyerstein toured during a visiting professorship in China in 1990 remains as elusive as ever. For example, he was told then that acupuncture can cure cholera, deafness, paralysis, cataracts, and mandibular overbite, among other things. Although the evidence was lacking, claims like these appealed to deep-seated longings in certain social movements that were emerging in the West during the 1970s. The "New Age" movement is only the latest in the long history of Western movements populated by seekers who have turned to the East for answers in times of disillusionment. As Huston (1995) has noted:

> The history of Sino-American relations is in part a story of Americans looking to the East and interpreting a huge, complex and, to an outsider, confusing culture in such a way that they see what they desire and fear the most.

Among New Agers in Europe and North America, there was an eagerness to embrace the "natural" and "holistic" philosophy they perceived in TCM. It fit nicely with their desire to replace the scientific worldview with mystical beliefs and, in particular, their willingness to credit virtually any healing claims, providing they are ancient or hail from exotic places.

TCM's growing popularity in Europe and North America is widely recognized. Its shaky scientific foundations and economic and politically driven push for legitimacy are perhaps less well known. When the authors' trip to China was conceived, the movement to make TCM part of the therapeutic mainstream in the West had already been 20 years in gestation. By 1995, the U.S. Office of Alternative Medicine had been created by Congress (not by scientists, it should be noted) and was sponsoring alternative medicine projects that were expected to provide hard evidence to justify some of these treatments.[6] TCM practitioners have recently requested that the U.S. Food and Drug Administration upgrade acupuncture needles from the "investigative device" category, and Congress has just passed a bill upgrading the official medical status of these needles. U.S. schools of TCM, felt by many to be diploma mills, are graduating practitioners who clamor for licensure. Twenty-eight states have already licensed lay acupuncturists, and most states allow physicians to perform acupuncture. Some states allow lay acupuncturists to be "primary care physicians" for industrial injuries (and be paid the same as licensed M.D.s and D.O.s). Seven states now have laws allowing any "licensed practitioner" to use any method he or she wishes, as long as the patient is informed in advance that the treatment lacks scientific validation.

A ward at the Acupuncture Clinic in the China Academy of Traditional Chinese Medicine in Beijing. Patient with acupuncture needles inserted in his leg for treatment of musculoskeletal problems. Next to his bed can be seen the electronic stimulator for delivering current pulses through the inserted needles. (Photo: Barry Beyerstein)

Likewise, unproven and possibly dangerous herbal remedies are widely sold in health food stores, herbalist shops, and by mail order in the U.S. and Canada. These products evade the regulations, which require prescription drugs to demonstrate their safety and efficacy scientifically, by means of a loophole that permits herbal remedies to be marketed as "food supplements."

A bill before the U.S. Congress would legitimize all unproven remedies in all states; and no longer would use of scientifically discredited treatments be grounds for discipline by professional boards. Practitioners of TCM stand to gain immensely from these political gambits. Much of the willingness of North Americans to support these trends has been due to uncritical media reports concerning the extent and effectiveness of TCM in China today. As several members of the Chinese scientific community became aware of these shifting attitudes in the West, they began to worry that their reputations were being tarnished abroad by the growing acceptance of the media-driven notion that Chinese medicine was undergoing a wholesale reversion to its ancient, mystical roots. Thus it seemed a mutu-

ally advantageous time for a North American team to look into the status of TCM in China. An invitation from the Chinese Association for Science and Technology (CAST) to these authors and Andrew Skolnick, associate news editor of the *Journal of the American Medical Association,* afforded us that opportunity. CAST has long been a foe of pseudoscience in China and welcomed the opportunity to strengthen the cooperative ties it had already forged with CSICOP.

What is Traditional Chinese Medicine (TCM)?

Every culture, including the Western culture, has evolved an indigenous system of folk healing (Atkinson 1956). Because of the body's natural restorative processes and the power of the placebo effect, many physiologically inert folk remedies have long enjoyed unearned credit for curing diseases. It is only in the modern scientific era that it has been possible to separate truly effective treatments from only apparently effective ones by means of double-blind, random-assignment, placebo-controlled tests. When submitted to adequate clinical trials, some ancient folk remedies have proven their worth; many more have not (Nolen 1974; Stalker and Glymour 1985; Skrabanek and McCormick 1990; Randi 1989; Barrett 1990; Pantanowitz 1994). It was our desire to see what progress the Chinese were making in scientifically evaluating traditional treatments that motivated our tour of the major TCM centers in Beijing and Shanghai during the summer of 1995.

TCM Library at the China Academy of Traditional Chinese Medicine in Beijing. A centuries-old herbalist's manual is preserved in an elaborate folding protective cover. (Photo: Barry Beyerstein)

Practitioners of TCM consider it an empirical "science" of healing that has proved its worth in Asian countries for more than 3,000 years (Wallnöfer and von Rottauscher 1975). According to Chinese government figures, there are now more than 2,000 TCM hospitals throughout the country (Hou 1991). Unlike Western scientific medicine, which aims to identify and counteract specific pathogens for different disease states, TCM views all illnesses as the consequence of a unitary cause, namely an imbalance of vital energies in the body. The term *Qi,* which translates roughly as "divine breath," refers to these putative energies, which are assumed by TCM to permeate everything in the universe. With respect to biological organisms, Qi is rather like the concept of *elan vital,* a hypothetical "life force" that was abandoned in Western medicine when scientific discoveries made it apparent that there is no essential difference in chemical constituents or processes between living and inanimate matter.

TCM's advocates assert that herbs, moxibustion, massage, breathing exercises, acupuncture, and certain foods are able to restore the balance of the *Yin* and *Yang,* variants of Qi energy, which are supposed to flow in invisible channels in the body called "meridians." By balancing Qi in this way, they say, health is maintained or restored. Some of the means for achieving this balance can look rather strange to those accustomed to scientific medicine. Take, for instance, something widely sold in China, the "505 Magic Bag." It is "shaped like an apron and, containing 50 [herbal] ingredients, [it] can prevent and treat many diseases of the stomach and intestines . . . [when] the bag [is worn] close to the navel" (Hou 1991).[7]

Critics have pointed out that TCM relies, even today, on an ancient philosophical view of the body that was formulated during an era when the Chinese, for religious reasons, were forbidden to dissect cadavers. Thus the organ systems referred to in the ancient texts that still underlie TCM's practices are merely metaphors that bear little relationship to the anatomical systems revealed by Andreas Vesalius, William Harvey, and the other pioneers of scientific medicine.[8] Chinese medicine of 3,000 years ago was certainly no more primitive than the folk practices from the same era that evolved into Western medicine; but just as we no longer rely on the astronomy of ancient Greece, it would seem that progress in anatomy, physiology, pathology, and therapeutics has rendered most ancient medical practices obsolete. For those who would argue that antiquity implies validity, consider the longevity of racism, sexism, or the belief in a flat Earth.

Although TCM is based on a philosophical rather than empirical understanding of bodily function, it is possible that some of its procedures might still work, but for reasons unrelated to the magical belief system that supplied their rationale thousands of years ago (Xie 1995). Open-minded physicians everywhere would welcome any treatment that could benefit their patients, regardless of its origins—*providing it can demonstrate its value in properly controlled clinical trials.* It was in this spirit that we approached the fact-finding mission that took us to the foremost TCM facilities in the People's Republic.

We had been aware for some time that Chinese Qigong masters were amassing considerable wealth and political power by allegedly healing people with mysterious force fields—supposedly "external" manifestations of their Qi "energy." Many masters subsequently immigrated to North America where they established even more lucrative healing ventures. Qigong masters were featured in Bill Moyers's highly acclaimed but embarrassingly credulous 1993 public television series, "Healing and the Mind." Appearing with Moyers on one segment was David Eisenberg, who enhanced his already high standing in the alternative medicine community by promoting the powers of the Qigong mentor, Master Shi. Moyers's demonstration made it appear that Shi, this elderly, frail man,

had the strength to resist vigorous shoving by his hearty young students, whereas he could apparently "push" them around from a distance with the invisible force of his external Qi. Our study of slow-motion replays led us to conclude that the student was not exerting any great muscular force on the master's body, but was only pretending to do so.[9] At one point, even the trusting Eisenberg is heard to shout, "Try harder. You look like you are faking it." In response to the master's movements, another student leaped backward, making it appear that the master's "energy" had repelled him without physical contact. Peter Huston, writing in the September/October 1995 SKEPTICAL INQUIRER ("China, Chi, and Chicanery") reached the same conclusion that we did from studying this performance. It looked like a well-rehearsed ballet. Various stage tricks passed off as miracles by Qigong masters have been repeatedly exposed by Chinese investigators, who were among our hosts during our tour of China (Lin et al., in press).

Eisenberg's 1982 book, *Encounters with Qi*, recounts the postgraduate training in TCM he received in China. In the book he describes many supposedly proven paranormal feats performed by Qigong masters.[10] Although he makes a few token proclamations of skepticism, Eisenberg seems curiously loath to ask the masters to recreate the effects he observed under conditions that would prevent the kind of stage tricks the demonstrations clearly resembled. In *Encounters with Qi*, he unquestioningly accepts the therapeutic benefits of balancing the body's (internal) Qi with herbs, acupuncture, and moxibustion (also an herbal treatment). When he returned to China with Moyers, Eisenberg continued to embrace the therapeutic effects of TCM as enthusiastically as he had back in his student days when he accepted as real the kind of "external Qi" effects others have exposed as magic tricks. Moyers seemed equally willing to credit the healing powers of Qi on the basis of nothing more than patient testimonials and the word of his guides. Eisenberg now directs alternative medicine courses for medical students and physicians through Harvard University. These courses and a 1993 article he coauthored on alternative medicine (Eisenberg et al. 1993) were funded by the Fetzer Institute, a $200 million endowment for the propagation of various unproven "mind/medicine" principles.

The effects shown on Moyers's program were said to be driven by "external Qi," the same doubtful force invoked to explain allegedly supernatural feats, (extraordinary functions of the human body) that the 1988 CSICOP delegation exposed as conjuring tricks. Although the delegation found this "force" dismally inaccurate when the Qigong masters invoked it to diagnose illnesses, it is the same "energy" that TCM advocates say runs through acupuncture meridians to effect healing. It has always struck us as odd that proponents can accept that this mysterious energy is unable to interact with the physical matter in the sensors of measuring instruments (which could confirm its existence) while it is still able to interact with the physical matter of bodily organs to "read" their state of health and produce a cure.

It was against this background of mysticism, naive trust in testimonials, prior incidents of fakery, and a host of intertwined political and ideological considerations that we set out to look into TCM's claims ourselves. We wanted to see if Qigong and other TCM practices were as fully integrated with scientific medicine in the Chinese health care system as proponents on this continent assert.[11] We had hoped to observe herbal prescribing, traditional pulse and tongue diagnoses, cupping, moxibustion, "back scraping," and the use of acupuncture for anesthesia, analgesia, and treatment of organic disorders. Some of these we saw and others we did not, since our hosts in the TCM institutions selected our itineraries for reasons steeped in philosophy, politics, and courtesy.

Research poster, laboratory of Dr. Han Jisheng, Neuroscience Research Center, Beijing Medical Center. The poster depicts biochemical effects of acupuncture discovered in Han's laboratory. (Photo: Barry Beyerstein)

Our Visit

Beijing: June 1995. While we were in Beijing, we enjoyed the superb hospitality of Madam Shen Zhenyu of CAST (the principal organizer), Mr. Lin Zixin (former editor of *Science and Technology Daily* and a CSICOP Fellow), Madam Shen Zhen-xin (of the Academia Sinia), and Mr. Bai Tongdong, a graduate student at Beijing University.

While touring the Forbidden City with us, Mr. Bai, a physicist and graduate student in the philosophy of science, set the tone for our later discussions with his assertion that Qi is a philosophy, not a reflection of physical reality. In his view, the principles of TCM, including Qi, are merely useful, socially determined metaphors for the realities and facts that only science can provide. He did not offer opinions on the validity of traditional Chinese medicine.

The morning of our first full day, we were taken to a major hospital and research institute at Beijing Medical University. There we were greeted by Professor Han Jishen, a world-famous neurophysiologist, and several other distinguished faculty members. Dr. Han proceeded to chair a seminar that included descriptions of the institute, its achievements in both Western and traditional Chinese medicine, and discussion among ourselves and the assembled faculty.

One of the speakers was Dr. Xie Zhu-fan, director of the Institute of Integration of Traditional Chinese Medicine and

Western Medicine. In his presentation he outlined three historical phases in the resurgence of TCM in China. Dr. Xie did not mention the political contributions to this renaissance, merely saying that in the early 1950s TCM began to be taught after decades of neglect and that some Western-trained Chinese physicians had been released from their duties to study TCM. After this, he said, there followed a period devoted to documenting the clinical effects of TCM. Dr. Xie admitted, as he does in his recent book (Xie 1995), that TCM philosophy is not compatible with modern science; but that acupuncture and some other traditional techniques have been demonstrated clinically to have analgesic properties or positive effects on certain functional disorders.

According to Dr. Xie, the Chinese are now in the third phase, the investigation of mechanisms that could account for TCM's clinical effects. For example, he said they had confirmed the ability of certain Chinese herbs to dilate blood vessels, decrease platelet activity (inhibit blood clotting), and "modulate immune responses." Because of the multiple actions of herbs, each could be used for several different disorders. Dr. Xie did not explain how these effects had been determined: whether the mixtures raised or lowered blood pressure and just how "immune system modulation" (we're not sure exactly what he meant by this term) benefits the patient. There was no discussion of side effects. Here, and during our discussions with other TCM physicians, it seemed axiomatic that when herbal medications are ingested, only desirable outcomes follow.[12]

A ward at the China Academy of Traditional Chinese Medicine in Beijing. Patient is being treated for a gastrointestinal problem using a process called moxibustion. The wooden box contains smoldering herbs on a meshwork bottom that is in contact with the skin of the patient's abdomen. (Photo: Barry Beyerstein)

After the opening seminar, we were taken on a tour of Professor Han's laboratory. Dr. Han heads an institute with a staff of thirty-seven that occupies three floors of one campus building. His support comes primarily from governmental grants, there being few, if any, independent sources of funding in China. Dr. Han also has grants from the National Institute on Drug Abuse in the U.S. and Upsa Laboratories, a French pharmaceutical company. We met several of his collaborators, whom we observed in their labs. Although the lab appointments were simple, they were serviceable. The hallways were dimly lit by single, sparsely distributed fluorescent lamps, electricity apparently being expensive. Much of the lab's equipment had been donated by an admirer of Dr. Han's, the distinguished opiate researcher, Avram Goldstein, who shipped his furnishings and apparatus to Beijing after retiring from Stanford University. The institute's walls were decorated with poster presentations from research meetings that described the lab's discoveries. Professor Han spent two more hours with us, touring the lab and summarizing the work of his group on the physiology and neurochemistry of acupuncture. Our interest was to see whether the cellular effects of acupuncture found in the animal experiments could legitimately account for the myriad clinical effects in human patients claimed by practicing acupuncturists.

A detailed account of Dr. Han's research is beyond the scope of this article, but we can summarize some of his work, which has been widely published and presented at international conferences (e.g., Chen et al. 1994). Dr. Han showed, before the discovery of the enkephalins (the brain's endogenous morphinelike neurotransmitters), that acupuncture caused a reduction in pain responses in rabbits and that transfusing a treated animal's cerebrospinal fluid into a nontreated animal produced a similar effect in the second rabbit. It was suggested that acupuncture had elevated the pain threshold by triggering a release of a transmissible agent (later identified as the opioid peptides, enkephalin and endorphin). Dr. Han later showed, by using antisense DNA in the system, that the ability of acupuncture to produce analgesia [lowered sensitivity to pain while conscious] can be prevented by blocking the expression of the endorphin receptor on the surface of spinal neurons. Others have shown that endorphin-blocking drugs also reverse acupuncture analgesia.

More recently, Dr. Han's group has shown that the peptide neurotransmitter cholecystokinin (CCK—receptors for which are believed to be distributed in close proximity to those for the endorphins) antagonizes the endorphin-related effects of acupuncture. It seems to do so by altering the endorphin receptor's affinity for its transmitter, or its ability to conduct messages inside the cell. Dr. Han thinks that natural hyperactivity of the CCK system in about 10 to 20 percent of the human population is responsible for the finding that a similar percentage of normal people is totally "nonresponsive" to acupuncture. He said he belongs to that group of nonresponders.

Our visit was too short to assess the adequacy of the methodology or the validity of these studies, although they seemed sound and have been published in peer-reviewed journals. Nonetheless, we felt that although this research is important basic science, it does not bear directly on many of the clinical claims made by acupuncturists. For instance, a rise in endorphin levels has been attributed to a number of varied activities—running, meditating, etc.—so Dr. Han's findings are not necessarily uniquely caused by acupuncture. The demonstration of an agent's effect in an animal model does not automatically imply its reproducibility, specificity, or significance in clinical practice.

Dr. Han maintained that, in humans, the acupuncture

point between the thumb and forefinger is specific for the results he measured; but others have found that the exact placement of the needles is unrelated to the pain relief or other clinical effects obtained (Richardson and Vincent 1986). In addition, other researchers have failed to reproduce the reversal of acupuncture analgesia by the morphine antagonist naloxone, so the conditions under which measurements are made may be important, and the optimal ones are not yet known. It should also be noted that the role of the endorphins in pain relief remains controversial because plasma endorphin concentrations are not consistently related to levels of pain experienced by humans (Skrabanek 1985). And finally, a transient rise in endorphin levels could not reasonably account for the prolonged pain relief claimed by acupuncturists, nor other avowed cures in organ systems that are unaffected by the endorphins.

Dr. Han has also developed a low-voltage electric stimulator for administration of electroacupuncture, which he favors for both research and therapy. Known as the "HAN N S," we found it used throughout China by those who prefer to deliver brief electric pulses through acupuncture needles rather than merely twirling the needles in the traditional manner. It resembles the TENS transcutaneous stimulators widely used in Western pain clinics.

Group photo at the Forbidden City in Beijing. *From left to right:* Bai Tongdong, Andrew Skolnick, Shen Zhenyu, Wallace Sampson, Barry Beyerstein.

Dr. Han was most gracious to us, and he is obviously a leader in his field. At the end of our tour, we wondered if he would agree, as we had read, that a number of other, less invasive stimuli can also raise endorphin levels in the central nervous system. We asked if it were not true, as Dr. Victor Herbert had shown,[13] that any irritative stimulus, such as a pinch, might produce a similar rise in endorphin levels (this is conceded by many acupuncturists who use "acupressure" where the skin points are simply massaged rather than needled). He replied that yes, that is so, but acupuncture does not hurt as much as a pinch. We wondered at this juncture why pinch controls are not routinely included in acupuncture experiments and how one could justify clinical use of an invasive method (needling) known to be capable of producing serious complications to obtain such modest, inconsistent results. We, like Skrabanek (1985), also wondered whether suggestion and placebo effects had really been ruled out by acupuncture researchers as a more parsimonious explanation for observed clinical effects in humans. The argument that acupuncture's effectiveness in animals eliminates the placebo explanation ignores the fact that the immobilization necessary to insert the needles in animal subjects has been shown to produce a sort of catatonia/analgesia by itself.[14] At the very least, we went away wondering why, back home, a special "profession" now needs to be created to administer this procedure, so little about it having been satisfactorily proved.

We next visited several clinics at the China Academy of Traditional Chinese Medicine in Beijing. The main one was a moderate-sized room, approximately 12 by 4 meters, crowded with ten or twelve patients being treated—most with acupuncture, several with acupuncture and moxibustion, and two with cupping, as described below. The acupuncturist deftly twirled the needles in the prescribed points, leaving them in place for twenty to thirty minutes. Some patients received electroacupuncture, others the traditional method. Moxibustion, the placement of burning herbs on the surface of the body, is like the process of "blistering" common in prescientific Western medicine. Here it was administered by placing the smoldering material in a wooden box with a porous, recessed bottom that was placed on the diseased body part—in these cases, the back or the stomach. This was difficult for us to understand because we could not see how any active ingredients the burning herbs might contain could be absorbed in therapeutic quantities, and we had read previously that, for moxibustion to be effective, the herbs must be twisted into small cones and burned precisely over the appropriate acupuncture points. Moreover, the same herbal mixture seemed to be used indiscriminately for a variety of quite different complaints.

For cupping, heated clear glass vessels were placed on the upper back and shoulders, on presumed meridians or acupuncture points. As the cups cooled, skin was sucked up, much as with a vacuum cleaner. The rationale given was that the suction draws out bad or diseased energy from the body. An identical practice survived from ancient times until surprisingly recently in Western medicine as well—to draw out diseased "humors" or "vapors" that are no longer believed to exist.

While touring the TCM complex, we made several observations. The total space in this institution devoted to the practice of TCM was a relatively small portion of its holdings. The rest of the complex of several large buildings was apparently devoted to more mainstream scientific research. We asked what portion of the total medical services delivered in China was TCM, and how people were chosen to receive TCM treatments. We received some surprising answers: Patients generally request TCM treatments themselves, rather than being referred to TCM practitioners by biomedically trained physicians. Most scientifically trained doctors do not practice TCM, nor do they decide on the mode of treatment if they should refer a patient for TCM.

TCM is practiced at the institute by specialists trained in their respective techniques. We were told that most TCM stu-

dents receive little scientific medical education and, overall, scientifically trained physicians seemed to have little interaction with TCM practitioners. Some physicians from abroad were studying at the institute, but most of the foreign students we met were physiotherapists, health food entrepreneurs, naturopaths, or other alternative medicine practitioners. By 1991 more than 2,000 foreign students had graduated from the thirty TCM colleges in China. At any given time, there are typically 30,000 Chinese students studying TCM (Hou 1991).

We were told that, these days, the proportion of Chinese patients choosing TCM, nationwide, is only about 15 to 20 percent, a figure that surprised us, but was consistent with the relatively small area allotted to these practices in the institute we visited in Beijing. Government publications as recent as 1991 had put the usage rate for TCM at about one-third of all patients in the country (Hou 1991). The 15 to 20 percent estimate was later reiterated by other informants who practiced TCM in Shanghai. Most TCM patients we observed were being treated for chronic problems such as indigestion, back pain, arthritis, and bursitis, which was not surprising to us. Conditions such as these often respond well to reassurance and psychological interventions and they tend to be cyclical, so virtually any treatment is likely to coincide with relief at some time. This is why placebo controls are essential in evaluating all putative therapies.

We were surprised at the low levels of personal interaction between TCM therapists and their patients. The warm, individualized attention and extended time spent with patients (a distinguishing feature of TCM according to its advocates in North America) was not evident here. Most patients arrived at the Beijing clinic with diagnoses in hand. The treatments we saw seemed to be largely symptom oriented, contrary to claims of supporters in North America who see as one of TCM's superiorities that it "treats the whole person." There was no attempt, in our presence anyway, to diagnose with TCM methods (e.g., by reading the fifteen unique pulses traditional healers say they can discern, or the more than 100 different diagnostic signs on the tongue [see Wallnöfer and von Rottauscher 1975]). Diagnoses for the patients we saw had generally been made by biomedical physicians, and the patients had elected to receive TCM in addition to their Western treatments. We were not shown acupuncture anesthesia for surgery, this apparently having fallen out of favor with scientifically trained surgeons. Dr. Han, for instance, had been emphatic that he and his colleagues see acupuncture only as an analgesic (pain reducer), not an anesthetic (an agent that blocks all conscious sensations).

Before leaving the Beijing Institute, we were shown the largest collection of references on TCM, especially herbalism, in China. We entered through a long reading room with rows of display cases and tables. Another room branched from the side and at the end was a large vault, temperature- and humidity-controlled, containing stacks of rare, ancient volumes. Splendidly bound, they dated back many hundreds of years, some much more, and contained beautiful illustrations of medicinal plants. TCM recognizes more than 8,000 plant species as having medicinal value. Students come from all over China to study these tomes, although we saw only a few while we were there. On another floor we were shown a major project funded by the UN's World Health Organization to establish a computer database from this storehouse of information about TCM.

Interspersed with our packed itinerary of official visits, we were shown the sights of Beijing including the Forbidden City, the Summer Palace, and several museums; and we trekked along the Great Wall. Everywhere we went, our hosts pampered and fed us in grand style. Our questions were answered frankly and we were always made to feel most welcome. In Part 2 of this report [to be published in a future issue of *SI*], we shall describe the major scholarly conference CAST arranged to coincide with our visit, and our further explorations of TCM in Shanghai.

Notes

1. "Qi" is the name Chinese philosophy gives to a scientifically undetectable force or energy that is supposed to permeate all things. Believers in TCM assert that imbalances in the flow of Qi are responsible for disease, fatigue, etc. Acupuncture, Chinese herbs, etc., supposedly restore well-being by rebalancing the flow of this mystical essence. Qigong is a set of mental and physical exercises akin to those of Tai Chi Chuan and Ai-ki-do that also promise spiritual and physical benefits by channeling this mysterious energy. With its mental disciplines and breathing exercises, Qigong has long been practiced as a form of self-hypnosis that claims to promote relaxation and general health, much in the manner of certain yoga exercises. These days, practitioners of this sort of discipline call it "internal Qigong" to distinguish it from so-called "external Qigong," which has enjoyed a dramatic rise in popularity in China and the West. Devotees of external Qigong claim they can control the Qi force outside their bodies to debilitate their foes, achieve the sorts of psychic feats familiar to Westerners, as well as to diagnose and cure physical ailments. Qigong masters have become rich and powerful in China, filling massive sports arenas for their demonstrations of magic and faith healing. Chinese skeptics who have exposed these Qigong hoaxers were among the hosts of the delegation that included these authors (Lin et al., in press).

2. Moxibustion employs various herbal materials but instead of being eaten, they are twisted into small cones and set on fire. The cones are placed over hypothetical "meridians" that are supposed to supply "Qi energy" to the afflicted part of the body. There they smolder, much like lit tobacco leaves. Although this is the traditional procedure, in the clinics we observed it had mostly been replaced by one in which a wire-bottomed box containing the smoldering herbs was simply placed over the site of the patient's complaint.

3. We should note, as Skrabanek (1985) points out, that TCM has been banned several times in Chinese history as useless, only later to be reinstated by official fiat. Mao's resurrection of TCM rescinded the 1929 ban instituted by the Kuomintang government, which had opted for scientific medicine over folk practices but did a very poor job of delivering it to the masses.

4. Western physicians have long been aware that suitably selected patients can undergo major surgery without anesthesia and show astonishingly little evidence of suffering if given hypnotic inductions or any of a host of other, related cognitive/social manipulations (see Melzack and Wall 1982, or Skrabanek 1985). Modern psychological research has shown that pain is partly a sensation and partly an emotional reaction (the "agony component"). Any manipulation of attention, anxiety, or arousal that attenuates the emotional component leaves the purely sensory aspect of pain surprisingly tolerable.

5. Many mainstays of modern pharmacology have their origins in traditional folk remedies (Lewis and Elvin-Lewis 1977). Traditional Chinese herbalism has already provided scientific medicine with valuable medications such as ephedrine (from the plant Chinese herbalists call "Ma Huang"). Undoubtedly, many other useful medicines remain to be isolated from the huge traditional pharmacopeia.

Unfortunately, as it stands, most traditional herbs have not yet been properly tested for safety or efficacy. Thus, herbalism remains an inseparable mixture of some safe and effective remedies, some inert placebos, and some dangerous substances. It is difficult, if not impossible, in most instances, to tell which concoctions belong in which of these categories. The encouraging news is that, particularly in China, there are increasing numbers of attempts to apply scientific methods to separate the effective herbal medications from the placebos and to isolate the active ingredients in those that actually work.

Firmly in the pseudoscience camp must be placed all traditional remedies made from rhinoceros horns, tiger penises, bear gall bladders and other parts of magnificent, endangered species. Lucrative poaching to harvest these body parts is seriously threatening these animals with extinction. And all this for useless treatments based solely on principles of sympathetic magic; i.e., the ancient belief that "like begets like." These are symbolically potent parts of powerful beasts, so it is believed that such organs must therefore magically transfer to the people who take them the vitality and fortitude of their donors.

6. The newly appointed director of the Office of Alternative Medicine, Joe Jacobs, soon ran afoul of the wishes of the alternative medicine community and resigned his post (Marshall 1994). Jacobs exhibited a rare and commendable mixture of willingness to entertain unconventional hypotheses and a hardheaded demand for rigorous tests before accepting them. Alternative practitioners had long contended that the only reason their treatments had not proven their worth scientifically was that the hidebound medical establishment had prevented them from receiving the necessary research funds. When Congress suddenly made grants available through the new institute, most proponents of alternative medicine proved that they didn't know how to conduct proper clinical trials and didn't really want them anyway. When they increased their demands that most of the money be turned over to them, without proper peer review, to continue gathering the scientifically useless testimonials they had always relied upon, Jacobs quit rather than perpetrate a charade. He called their demands "professionally insulting."

7. This exemplifies another aspect of sympathetic magic in TCM. Believers in "contact magic," say that things that are in physical proximity can influence each other by passing a mystical "vital essence," merely by being in the same vicinity. This is why psychics believe they can tell things about absent owners of objects they are allowed to hold—the owners' essence supposedly transferred to the object and then into the psychic, by contact.

8. For instance, no reputable scientist has ever found an anatomical basis in the circulatory, nervous, or lymphatic systems for the "meridians" through which the health-enhancing vital energies posited by TCM are supposed to flow. The energies themselves cannot be detected by conventional scientific instruments. Likewise, doubts have been raised because of the ways in which TCM remedies, such as moxibustion, are administered—it must be claimed that they interact with their target organs by some sort of dubious "vibrations" or "sympathy" because our modern understanding of the body's integument and membrane properties rules out their absorbtion by and distribution to target organs by any of the conventionally accepted routes. For instance, take this description of a TCM product promoted by an official Chinese government publication: "Yuwang-Brand Superior Weight-Reducing Bathing Liquid is made from medicinal herb extracts mixed with high quality detergent. It cleans the skin and promotes fat metabolism, helping to reduce weight and keep the figure slim" (Hou 1991, p. 33).

9. Whether this disciple was in fact "pulling his punches" intentionally to make his master look good, or was psychologically deluding himself that he was actually applying massive force when he was not, remains a matter of conjecture. What is known is that strong believers are capable of "ideomotor actions" (or *in*actions) where they honestly believe their movements (such as with a Ouija board or a dowsing rod) are not being initiated and controlled by their own volition (Vogt and Hyman 1979). Similarly, there is evidence that people can sincerely convince themselves they are exerting muscular effort when in fact they are not. Various hypnotic phenomena are of this sort.

10. In a similar vein, Barry Beyerstein, when he lived in China several years ago, was told by the staff at his residence that they knew a Qigong master who could leap over buildings. Of course, they said, the skeptical foreigner could have a demonstration. Unfortunately, for some reason, the time was never quite right. When he returned to Canada, Beyerstein organzed a lecture by a famous Qigong master, Ge, who had relocated to Vancouver. Ge promised to demonstrate the power of his Qi by making distilled water taste sweet. Once again, the audience was greatly disappointed when, after a rambling, incoherent lecture, the master announced he was now too tired to do the double-blind, forced-choice test Beyerstein had prepared. Ge's claim that he could diagnose diseased organs by passing his hands over the surface of a patient's body and feeling a twinge in the same organ in his own body was met with a question from the floor: "And just how do you detect ovarian cancer?"

11. It was the conclusion of Barry Beyerstein, after touring several treatment facilities outside the largest Chinese cities six years ago, that the much-publicized "complete integration" of traditional and scientific practitioners was not as happy a marriage as it had been portrayed. Back then, scientifically trained Chinese doctors were more circumspect in expressing their doubts about official encouragements of TCM, but many of them expressed their reservations quietly to the visitor nonetheless. On this more recent visit most scientific critics were bolder, but still cautious.

12. This belief that if something is "organic" or "natural" it must be milder, safer, and more benign than "manufactured" drugs is a common misconception among most practitioners of herbal medicine. A moment's reflection will reveal that strychnine, "deadly nightshade" (belladonna), and a variety of mushrooms are among nature's most dangerous poisons. Many herbal remedies are of questionable safety, let alone efficacy (Tyler 1985).

13. In a personal communication, Herbert presented the following account of a demonstration of animal acupuncture he had observed in China. The experimenter inserted needles into the animal subject and took a blood sample that showed a rise in endorphin levels. Herbert asked if he could try pinching the skin to see if it would have a similar effect on endorphin levels to that of the needles. It did.

14. Known in the older literature as "animal hypnosis," grabbing and rapidly turning over small mammals can produce a stunned immobility, a protective freezing response, in which they appear to be insensitive to painful stimuli.

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Maria's Near-Death Experience:
Waiting for the Other Shoe to Drop

The extraordinary story of a Seattle heart patient is widely cited as powerful evidence for a near-death experience as more than a complex hallucination. Here is our investigation of the claim.

HAYDEN EBBERN, SEAN MULLIGAN, and BARRY L. BEYERSTEIN

I'm not afraid to die; I just don't want to be there when it happens.

—Woody Allen

Skeptics enter most debates at a disadvantage because they are usually forced to cast doubt on comforting beliefs. The idea that so-called near-death experiences, NDEs for short, could count as evidence for survival of the soul after death is perhaps the most comforting belief of all. Since physician Raymond Moody (1975) coined the term "near-death experience" to describe a reasonably consistent set of experiences recalled by about a third of those who are resuscitated after near-fatal incidents, such descriptions have been welcomed with enthusiasm by a large segment of the public.

Susan Blackmore (1991) has described near-death experience as follows: "For many experiencers, their adventures

seem unquestionably to provide for evidence for life after death, and the profound effects the experience can have on them is just added confirmation. By contrast, for many scientists these experiences are just hallucinations produced by the dying brain and of no more interest than an especially vivid dream. So which is right? . . . neither is quite right: NDEs provide no evidence for life after death, and we can best understand them by looking at neurochemistry, physiology, and psychology; but they are much more interesting than any dream. . . . Any satisfactory theory . . . leads us to questions about minds, selves, and the nature of consciousness."

Historically, philosophers have used the term *mind* to refer to the subjective awareness of one's self and its surroundings and the experience of imagining, planning, and willing our actions. Psychologists and neuroscientists generally prefer the term *consciousness* when referring to this inner stream of perceptions, images, memories, and feelings. It is from them that the brain assembles the conscious model it experiences as reality. By mixing inference with sensory inputs, body images, emotions, and stored memories, the brain constructs our sense of an ongoing self dwelling in a physical body, surrounded by a real world of objects and events. In religious lore, the terms *soul* or *spirit* encompass not only this subjective awareness of the self and its whereabouts, but also the belief that this mental tableau is a manifestation of a divine *essence* each individual is thought to possess. Believers consider souls nonmaterial, usually immortal. In what follows, *mind* and *consciousness* will refer to secular, naturalistic depictions of mental awareness. *Soul* or *spirit* will be reserved for when the holder's views imply that this awareness of the self is somehow supernatural, separable from the body, and capable of surviving death (i.e., in an "afterlife"). NDEs are only one example of episodes in which the brain's construction of reality breaks down temporarily and allows the self model to *feel* as if it were pure spiritual essence, no longer attached to a physical body.

Figure 1. View from the ground outside Harborview Medical Center where the shoe Maria said she saw was located. In the background is the Smith Tower, where an NDE support group said one would have to be positioned to see a shoe on the medical center window ledge.

The NDE typically begins with a sense of serenity and relief, followed by a feeling that the self is leaving the body (the "out-of-body experience," or OBE). From this vantage point, the supposedly disembodied spirit sometimes feels that it is observing attempts to revive its lifeless body. A subset of those who reach the OBE stage further report being propelled through a spiral tunnel toward a bright light. For some, the light eventually resolves into a significant religious figure, deceased relative or friend, or vista of paradise. As rescue procedures begin to take effect, these patients often report feeling great reluctance at being pulled back into the painful, uncertain, everyday world.

Virtually every book retelling this now-familiar story achieves best-seller status and reaps substantial rewards for its author.

James Alcock (1981) provided several insights into the motivations underlying this fervent longing for "proof" of an afterlife. He also suggested an explanation for why the will to believe so readily overcomes the desire to examine the evidence critically (Alcock 1981, p. 65):

> Intellectually capable of foreseeing that they will one day die, yet emotionally too frail to accept that physical death may indeed be the end of their existence, human beings have long clung to the idea that life continues beyond the grave.

Alcock reminds us that survival beyond death lies at the core of almost all formal religions and that protecting this hope was also a major impetus for the founding of the modern discipline of parapsychology. Alcock was referring in the latter statement to the eminent group of British scholars and statesmen who in the nineteenth century banded together to form the Society for Psychical Research. Disturbed by the implications of modern science for their Christian worldview, these members of the intelligentsia espoused the goal of establishing *scientific* proof for the existence of an immortal soul.

Reports of NDEs appeared earlier than the nineteenth century, however. One of the earliest accounts is that of a soldier's supposed return from death, found in Plato's *Republic*. The Bible too is replete with stories of people raised from the dead, as are the sacred texts of most other faiths. Although reports of NDEs have shown up over the centuries, the appearance rate seems to have increased dramatically in recent times. This is likely due to vast improvements in emergency medicine, coupled with a worldwide resurgence of religious fundamentalism (a twentieth-century movement among Christians, Jews, and Muslims that advocates the literal interpretation of their respective sacred writings). The spiritual interpretation of NDEs is reinforced by the mass media, which prosper by pandering to public longings of all sorts, including the desire for life after death.

The concept of immortality is, in the final analysis, a metaphysical proposition that can only be accepted or rejected on

Hayden Ebbern is an undergraduate in the Department of Psychology and Sean Mulligan is a graduate student in the Department of Biological Sciences at Simon Fraser University. Barry Beyerstein is a faculty member and member of the Brain Behavior Laboratory in the Department of Psychology at Simon Fraser University, Burnaby, B.C., V5A 1S6, Canada.

faith (Edwards 1992). While faith alone used to be sufficient to bolster such convictions, the growing prestige of science has left many sophisticated believers uneasy in the absence of more solid proof of an afterlife. In response, a field known as "near-death studies" has emerged with the thinly veiled agenda of providing a scientific gloss for religious views of an afterlife. About the same time, another field emerged known as "anomalistic psychology" (Reed 1988; Zusne and Jones 1989; Neher 1990). It accepts that experiences such as NDEs and OBEs can seem compellingly real to those who have them, but offers many reasons to doubt their reality outside the mind of the percipient (Blackmore 1993). Anomalistic psychology seeks naturalistic explanations for various seemingly supernatural states of consciousness based on sound psychological and neurophysiological research (Beyerstein 1987-1988, 1988).

To accept notions such as survival after death, disembodied spirits, and a host of other parapsychological phenomena, one must also adopt some form of the philosophical doctrine known as "dualism" (Beyerstein 1987-1988). Dualism asserts that the mind is fundamentally different from the physical body, and this is essentially equivalent to the religious concept of an "immaterial soul." If dualism is correct, it is possible, some say, for mind or consciousness to disengage temporarily from the body but still retain self-awareness and the ability to gather information and interact physically with the environment. Many dualists also believe that their spiritual selves are immortal and that these spiritual selves will eventually abandon their physical bodies and assume a separate existence in some other realm. All of this is impossible from the standpoint of "material monists" who assert that the mind is equivalent to and inseparable from brain function.

Figure 2. The Harborview Medical Center Emergency Room entrance, showing the canopy and curved driveway. Maria's room was directly above the entrance.

Not surprisingly, NDE accounts are welcomed by many occultists because they appear to be a major impediment to the materialist worldview they find so distasteful. Likewise, in fundamentalist circles, NDEs are hailed as a vindication for various spiritual teachings.

Materialists readily concede that the subjective experiences of the NDE *feel* very real. Indeed, they contend that NDEs helped suggest the concept of an immortal soul to our ancestors in the first place. Despite the subjective realness of the NDE, however, modern neuroscience offers not only a wealth of reasons to doubt the possibility of disembodied minds, but it also provides much evidence that the compelling subjective phenomena of the NDE can be generated by known brain mechanisms (Beyerstein 1988; Blackmore 1991, 1993). Believers counter that the NDE seems too real to have been a dream or hallucination, but they forget that what we *mean* by the term *hallucination* is an internally generated experience so detailed, emotional, and believable that it is indistinguishable from ordinary perceptions of reality (Siegel 1992; Beyerstein 1996).

It is also important to note that NDEs are always reported by people who presume they have died, but have not really died. Cardiopulmonary arrest (C.P.A.)—i.e., stoppage of the heart and lungs—was once an adequate definition of death. With the advent of modern resuscitation techniques, however, it became possible in some cases to restore breathing and pulse, often as long as several minutes after they had ceased. During C.P.A., the brain undergoes several biochemical and physiological changes, but by relying on its limited backup of stored oxygen and metabolic fuels, certain aspects of consciousness can be sustained, albeit in a somewhat degraded fashion. Thus, it is not surprising that there might be some residual memories from the time that one was dying, but not yet clinically dead.

That this minority of revived C.P.A. patients recall anything from the interval tells us more about how the brain creates our sense of self and the feeling that there is an external reality than it does about the possibility of an afterlife. Much can be learned from studying the orderly fashion in which these internally constructed models shut down when the brain is traumatized, but because those who have been revived did not reach the irreversible state of brain death, any experiences they recall cannot be said to have come from "the other side."

The subjective contents of the NDE are anything but unique to the onset of death. The basic elements of the NDE are common to hallucinations of various sorts. They are also found in psychedelic drug states, psychoses, and migraine and epileptic "auras" (Siegel 1992; Blackmore 1991, 1993; Beyerstein 1996). Similar experiences have even been reported in a surprisingly high proportion of those who panic during natural disasters, when they are psychologically traumatized but in no real physical danger (Cardeña and Spiegel 1993).

If the components of the NDE have plausible roots in brain physiology, this undermines the argument that they are a glimpse of the afterlife rather than a rich and believable hallucination. It is for this reason that accounts of NDEs that contain elements that are logically incompatible with the hallucination hypothesis assume special importance.

One attempt to gather objective evidence, rather than the usual anecdotal, after-the-fact accounts, has been initiated by the British psychiatrist Peter Fenwick (personal communication). He has placed messages written on paper on ledges, above eye level, in the operating rooms of the hospital where he works.

If a surgical patient should have an NDE/OBE, then his or her spirit, which supposedly hovers far above the body, looking down on it, should be able to read the otherwise inaccessible messages and recall them when revived. As yet, no one has been able to provide this kind of objective evidence, which would admittedly create serious problems for the materialist position. In the absence of such proof, the spiritually inclined fall back on those NDE reports where things are "recalled" about the resuscitation environment, or about distant places that the revived person supposedly could not have known unless his or her spiritual self had been observing from outside the body.

Psychologist Ray Hyman has long urged his fellow skeptics to concentrate on the cases that supporters of paranormal claims put forth as their very best. If these examples fall short, logically or empirically, the remainder must be even weaker.

In the area of near-death studies, the widely cited story of the Seattle heart patient known as "Maria" occupies a place of pride for paranormalists (Clark 1984; Wilson 1987; Rogo 1989; Blackmore 1993; Ring and Lawrence 1993).

This account is held in such high regard primarily for two reasons. First, many of its proponents have some professional standing. More important, it is claimed that, during her NDE, Maria became aware of things, including an oddly positioned shoe, that were impossible for her to have known unless her spirit had literally departed and returned to her body. Throwing down the gauntlet to disbelievers, the prominent NDE researchers Ring and Lawrence (1993, p. 223) say this about the case:

> Assuming the authenticity of the account, which we have no reason to doubt, the facts of the case seem incontestable. Maria's inexplicable detection of that inexplicable shoe is a strange and strangely beguiling sighting of the sort that has the power to arrest the skeptic's argument in mid-sentence, if only by virtue of its indisputable improbability.

Figure 3. Close-up of a Harborview Medical Center third-floor window ledge and the investigators' shoe.

Because Maria's story was frequently recommended to us as their "best case" by those who believe NDEs are different from hallucinations, we decided to conduct our own investigation. In 1994, Hayden Ebbern and Sean Mulligan traveled to Seattle to visit the sites where the events surrounding Maria's NDE transpired and had several conversations with Kimberly Clark, who first reported the incident (Clark 1984). They also attended a meeting of the support group Clark founded for people who have experienced NDE. Despite repeated efforts, including contacting media people who publicized the event, we were unable to locate Maria or anyone other than Clark who claimed to have had direct contact with Maria. Given the seriousness of the medical condition that led to her NDE, we assume Maria is no longer living. The following description of Maria's NDE is constructed from Clark's (1984) original report and from telephone and face-to-face conversations the authors had with Clark.

Maria's NDE

In April of 1977, Maria, a migrant worker from the Yakima area of Washington state, was visiting friends in Seattle when she suffered a severe heart attack. She was taken, at night, by paramedics to Harborview Medical Center where she was admitted to the coronary care unit. Kimberly Clark, a social worker, was randomly assigned to Maria to provide assistance with social and financial problems arising from her illness. Clark says she spent a considerable amount of time with Maria and was with her when, three days after her admission to the hospital, she suffered a cardiac arrest. Because Maria was being monitored closely, she was resuscitated quickly and her condition stabilized.

Later the same day, Clark returned to see Maria and found her quite distressed about what she had experienced during the recent emergency. Maria told Clark, "The strangest thing happened when the doctors and nurses were working on me. I found myself looking down from the ceiling at them working on my body." Clark was not immediately impressed by this for she realized that, like most people who have been exposed to television, movies, novels, and magazines, Maria could be expected to have known what would be happening during such a procedure. Maria had also been in the cardiac facility long enough to become familiar with its staff, equipment, and emergency routines. And, because hearing is one of the last senses to drop out as someone loses consciousness, she could have heard much that she seemed to know about her resuscitation when she later described the scene to Clark. Thus Clark initially leaned toward our position that Maria's account was a sincere recollection of visual and audio images that welled up from her memory during her cardiac arrest. However, as Maria elaborated further, Clark began to doubt her own initial assessment.

Clark began to be impressed when Maria told her of seeing chart paper streaming from the machines monitoring her vital signs, even though no one had talked about it while reviving her. More dramatically, Maria also said that she became distracted by something over the emergency room driveway and suddenly found herself outside the building, as if she had just "thought herself" there. Maria also described the area around the emergency entrance, relating details such as that the doors

opened inward, that the emergency entrance is reached by a one-way road, and that the road had a curve in it.

These details piqued Clark's interest because she knew Maria had arrived after dark and she thought it unlikely that she would have absorbed much knowledge of the approaches to the emergency area. Initially, Clark considered the possibility that, because the room Maria was assigned is above the emergency entrance, she might have looked out the window sometime in the three days prior to her NDE, and noticed the layout of the area below. However, Clark told us that she came to believe that these prosaic explanations were unlikely. She believes that Maria could not have seen the driveway area from her window because it is obscured by a canopy over the entrance (Figure 2). And furthermore, Clark asserted, Maria had been restrained by various lines attaching her to the physiological monitors, making it doubtful she could leave her bed to look out the window.

Maria went on to describe being distracted again, this time by something on a third floor, outside window ledge at the north side of the hospital. Maria said she "thought her way" up to the object and discovered that it was a shoe. She described it as a large tennis shoe that was worn at the small toe and sitting with a shoelace tucked under the heel. Maria then asked Clark to search for the shoe as a way of verifying that her spirit had really been out of her body.

Figure 4. Author Sean Mulligan outside the medical center, with the investigators' shoe visible on a third-floor window ledge. Note the construction fence that prevents the even closer access that was possible around the time of Maria's NDE.

Clark went outside to see if she could make out the shoe from ground level, but said she couldn't see anything unusual in the suggested direction. She then returned inside, went upstairs in that wing, and began going through various patients' rooms, looking out the windows. She recalls the windows as being so narrow that she had to press her face against the glass, just to see the ledge at all. Eventually, by pressing her face tightly against the glass of one of the windows, Clark says, she was able to look down and see a tennis shoe on the ledge. This was a third floor window ledge of a patient's room on the west side of the hospital's north wing. The wing faces Puget Sound and a local landmark known as the Smith Tower (Figure 1). People at the NDE support group the authors attended embellished this part of the story, claiming that the shoe was positioned so that one would have to have been in the Smith Tower, miles away, to be at the correct angle to see it; then, of course, it would have been much too small to recognize from that distance.

Although she had been able, with difficulty, to see the shoe from inside, Clark believed her view of it had differed from Maria's. That is because for Maria to have noticed that the side of the shoe next to the small toe was worn and that a shoelace was tucked under the heel, she would need to have viewed it from the opposite direction; i.e., looking from outside toward the building rather than from inside. Clark is adamant that these details of the shoe could not have been visible from inside the hospital. Clark retrieved the shoe, convinced that it offered irrefutable proof that Maria's spirit had indeed left her body and floated outside of the hospital during her cardiopulmonary arrest.

Do These Recollections Require a Spiritual Interpretation?

On the surface, certain aspects of Maria's story seem to defy naturalistic explanation. The leading NDE researchers Ring and Lawrence, quoted earlier, accept Clark's spiritualistic interpretation wholeheartedly, although they do admit that not everyone would agree. There are, of course, other plausible explanations for the key points that distinguish this case. Closer examination reveals that the story is much less impressive than it seems at first blush.

Clark was impressed by the fact that Maria recalled seeing chart paper streaming from monitoring apparatus while she was supposedly out of her body. But, as Clark admits, Maria could have been familiar with the hospital equipment and procedures. So, like other parts of typical NDEs, it is quite possible that this was merely a visual memory incorporated into the hallucinatory world that is often formed by a sensory-deprived and oxygen-starved brain. We know that the brain frequently tries to construct a substitute image of external reality from memory when traumatic changes temporarily deprive it of its normal sensory inputs (Blackmore 1993; Beyerstein 1996). Because this memory-derived imagery is the most complete and stable construct the brain can muster under the circumstances, it is accepted as reality for the moment.

Maria's description of the emergency entrance and driveway area may also seem extraordinary at first glance, but a bit of reflection upon standard hospital design suggests that Maria reported nothing more than what common sense would dictate. It would strike most people as logical that the doors of a hospital emergency room would open inward as it would be awkward for paramedics to have to negotiate doors that opened toward them as they rush patients, stretchers, wheelchairs, and other apparatus into the emergency room. In addition, Maria may have picked up more direct knowledge of the scene than she was aware of, for she had been brought into the hospital through this entrance.

The same weaknesses are apparent when we consider

Maria's knowledge of the driveway. Although it was dark when Maria arrived, the area is well-lighted. Even if she hadn't been fully conscious and able to observe the scene as she was trundled through it (hospital officials would not confirm Maria's level of consciousness upon arrival), it only makes sense to require one-way traffic in such areas to facilitate the safe and orderly entrance and exit of speeding emergency vehicles. And recall that the room Maria occupied for three days prior to her NDE was immediately above the emergency entrance (Figure 2). Giving Clark the benefit of the doubt when she suggests that never once did Maria catch a glimpse of the entrance area beneath her window, it is still not far-fetched to assume that she could have gained some sense of the traffic flow from the sounds of the ambulances coming and going. At night, reflections of vehicle lights could also supply similar clues, even to a bedridden patient.

While most parts of Maria's account are neither unique nor convincing, her sighting of the tennis shoe seems problematic for those who would explain her NDE as a hallucination. Clark has long maintained that the shoe was undetectable except from a vantage point outside of the hospital and above the third floor of the building. As part of our investigation, Ebbern and Mulligan visited Harborview Medical Center to determine for themselves just how difficult it would be to see, from outside the hospital, a shoe on one of its third-floor window ledges. They placed a running shoe of their own at the place Clark described and then went outside to observe what was visible from ground level. They were astonished at the ease with which they could see and identify the shoe (Figure 3).

Clark's claim that the shoe would have been invisible from ground level outside the hospital is all the more incredible because the investigators' viewpoint was considerably inferior to what Clark's would have been seventeen years earlier. That is because, in 1994, there was new construction under way beneath the window in question and this forced Ebbern and Mulligan to view the shoe from a much greater distance than would have been necessary for Clark. Figure 4 shows Mulligan in front of the construction fence that prevents the much closer access that would have been possible in 1977. It is from this position that the photo in Figure 3 was taken.

The construction site had been, until 1994, a parking lot and patient recreation area. Thus, back in 1977, many people in this high-traffic area would have had the opportunity to get a better view of a shoe on the ledge than we had. If we could see our shoe with such ease from a greater distance, it seems reasonable that many people who used the parking lot and recreation facility would have noticed one as well. When Ebbern and Mulligan returned to Seattle one week after placing the shoe on the third-floor ledge, the shoe had been removed, proving that it was also discernible to someone not specifically looking for it.

It is not a far-fetched notion to assume that anyone who might have noticed the shoe back in 1977 would have commented on it because of the novelty of its location. Thus, during the three days prior to her NDE, Maria could have overheard such a conversation among any of the doctors, nurses, patients, visitors, or other hospital staff who frequented this busy area. Memory researchers are well aware that people can hear snippets of conversations outside their focal awareness and recall the contents in various forms, including visual images, even though they honestly believe they never encountered the information before. This is known as "cryptomnesia" (Zusne and Jones 1989, p. 138).

Let us suppose, for the moment, that no one noticed the original shoe in 1977 on the hospital ledge from outside the building. Would that rule out nonspiritualistic explanations for the contents of Maria's NDE? Not necessarily. According to Clark, it was nearly impossible to see the shoe from inside the building. She emphasized how difficult it was to find the shoe when Maria asked her to search for it: "I went up to the third floor and began going in and out of patients' rooms and looking out their windows, which were so narrow that I had to press my face to the screen, just to see the ledge at all."

When Ebbern and Mulligan visited the third-floor wards at Harborview, they did not find this to be the case at all. They easily placed their running shoe on the ledge from inside one of the rooms and it was clearly visible from various points within the room. There was no need whatsoever for anyone to press his or her face against the glass to see the shoe. In fact, one needed only to take a few steps into the room to be able to see it clearly. To make matters worse for Clark's account, a patient would not even need to strain to see it from his or her bed in the room. So it is apparent that many people inside as well as outside the hospital would have had the opportunity to notice the now-famous shoe, making it even more likely that Maria could have overheard some mention of it. The peculiarity of its position would almost certainly invite speculations about what kind of prankster or bungler could have been responsible.

Those who prefer the spiritualistic explanation of Maria's NDE also stress a number of details in her description of the shoe. Clark has repeatedly declared that the only way Maria could have known about the worn spots on the shoe and position of the shoelace was if she had been hovering outside the window—allegedly these details were undetectable from anywhere else. Having visited the scene ourselves, we determined that one did not need to be pressed against the glass to see the shoe, but we did find that by assuming that position it would have been easy to discern the additional details that so impressed Clark. Looking down from that angle at the shoe we placed on the ledge, we had no difficulty seeing the shoe's allegedly hidden outer side.

Thus we believe we have shown that it would not have been as difficult as Clark claims for Maria to have become aware of the shoe prior to her NDE. It would have been visible, both inside and outside the hospital, to numerous people who could have come into contact with her. It also seems likely that some of them might have mentioned it within earshot. But even if we assume that none of this occurred, there are other considerations that make this less than the airtight case its proponents believe it is.

Memory and Interpretive Biases

Kimberly Clark is not a trained investigator and she did not publicly report the details of Maria's NDE until seven years after it occurred. It is quite possible that during this interval some parts of the story were forgotten and some details may have been interpolated. As Clark has not produced notes or recordings from her interviews with Maria, we have no way of knowing what leading questions Maria may have been asked, or what Maria might have "recalled" that did not fit and was dropped from the record. Research shows that we all have a confirmatory bias that leads us to recall and embellish information that supports our beliefs and to forget parts that do not. This is true both for individuals central to the event and for their supporters, especially when an oral account of the event becomes the subject of controversy and there is a need to defend one's credibility and point of view. Memory researchers call this tendency for stories to improve over time "sharpening and levelling." Details that support a story assume greater prominence, and details that might make the story less convincing fade.

In talking about her NDE, Maria could have unintentionally filled in inferred details to flesh out the story. Pressed for details by someone in a position of authority, this woman of modest status could easily have succumbed to what psychologists call "demand characteristics" and, quite innocently, filled in more than she knew from direct experience. Research shows that humans edit and shape memories in order to achieve a comprehensible and satisfying account of past events. Once Maria had reported a shoe sitting on an outside ledge, it would have been plausible to infer it was an old shoe—otherwise wouldn't the owner have taken the trouble to retrieve it? From this, it is only a small step to assume a worn toe, not unusual in an old shoe. That the shoelace was correctly described by Maria as tucked under the heel may also have been a later addition to a story that, as we have seen, is marked with memory distortions on Clark's part. As far as we were able to ascertain, Clark never photographed the shoe on the ledge. When Ebbern and Mulligan asked Clark about the current whereabouts of the shoe, Clark replied that she probably had it around somewhere, maybe in her garage, but that it would be too much trouble to look for it. This cavalier attitude toward the most important artifact in the field of near-death studies struck us as odd, given the almost mythic status this humble piece of footware has been accorded.

Perhaps in her excitement at discovering the shoe, and in her haste to retrieve it, Clark did not spend sufficient time analyzing and recording details of the situation, and now honestly misremembers how closely the facts matched Maria's account. Note, for example, that her assertions about the invisibility of the shoe are clearly exaggerated in her memory. The motivation to defend cherished or self-serving beliefs makes it easy for unintentional embellishments to creep into key accounts as they are retold. In our discussions with her, Clark exhibited obvious emotional commitment to the spiritual interpretation of Maria's story. She has become a minor celebrity because of her involvement with it and is writing yet another, potentially profitable, book on the subject. When Ebbern and Mulligan attended meetings of the support group Clark runs (which bills itself as devoted to scientific research into NDEs), they were struck by the revival-meeting atmosphere. The participants exhibited a conspicuous lack of scientific knowledge and low levels of critical thinking skills. They seemed quite unaware of how to mount a proper investigation of such incidents. The appeal throughout was strictly to faith. The few mildly critical questions the visitors raised were decidedly unwelcome.

Conclusion

Our investigation cannot prove that Maria's spirit did not leave her body and return, nor that Kimberly Clark's recollections and interpretations are wrong. It does, however, show that this case, often touted as the best in the area of near-death studies, is far from unassailable, as its proponents assert.

We have shown several factual discrepancies and plausible ways that Maria's supposedly unobtainable knowledge could have been obtained by quite ordinary means. On delving into this incident, we were first disappointed, then amused, that such a weak case should have achieved the importance it has been accorded. Ring and Lawrence (1993) certainly must have spoken in haste when they issued their challenge; for rather than "arrest[ing] the skeptic's argument in mid-sentence," investigation of Maria's story has shown us the naivete and the power of wishful thinking in the supposedly scientific area known as "near-death studies." Once again, it is apparent why Demosthenes cautioned, more than 2000 years ago, "Nothing is easier than self-deceit, for what each man wishes, that he also believes to be true."

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Wait! I've Changed My Mind . . .

Environmental doomsday models and eminent scientific and political authorities provide opportunities for teaching critical thinking to college students.

PAUL NICKEL with NANCY SHELTON

Iconoclastic writing assignments that require applying skeptical tests to environmental "doomsday models" are a dramatically successful way to teach students the nuts and bolts of the scientific method. The students learn what the skeptical tests are and how to use them; and they learn the difference between advocates and scientists. (Advocates attempt to prove their models right, but scientists prove those models wrong.) A bonus is that with all this practice, student writing becomes better too.

Writing assignments force reasoning and logic to be made explicit and visible in a comprehensible process. Applying skeptical tests in written assignments etches the tests firmly in students' brains. Students become better writers also because in too-large classes (120-170) they help edit each other's 25 formal and informal papers per semester. (Of course, the newly acquired critical thinking skills aren't limited to analyzing "doom scenarios." They are useful in nearly any subject, field, discipline, or project, e.g., history.)

Why select environmentalism? Now that we no longer believe Charles Wilson's "What's good for General Motors is good for the country," we are all environmentalists. That's one place many unquestioned, untested, unfalsified models are *now: And that is precisely why we should question our beliefs.* Obviously, the same critical methods can be applied to claims in virtually any field.

Doom Models

Most contemporary doomsday models begin with Thomas Robert Malthus's predicted population growth and resulting resource shortages. Other reasons for the predicted end of the world include global warming, pollution, AIDS, the "rainforests' revenge" (loss of lifesaving exotic plant cures), global starvation, and global cooling. Fortunately, the predictions and models are useful for teaching students to be skeptical and to question conventional wisdom, whether proffered by metaphysics, religion, environmental science, or social science. The easy adoption of and unquestioning belief in conventional wisdom by the television generation gives the crafty teacher a way to present numerous evidence tests. A major virtue of environmental warnings is that failed models and predictions provide a magnificent way to teach science process, logic, reasoning, analytical writing, and the glum realization that we can't prove anything but should test everything.

FRSNs (frissons)

Who/what are FRSNs? Shorthand for critical thinking tools: tests and rules.

F—FiLCHeRS—an acronym coined by James Lett (1990). The capital letters stand for Falsifiability, Logic, Comprehensiveness, Honesty, Replicability, Sufficiency.

R—Rules by Milton A. Rothman (1990):

1. Don't believe everything you read or hear.
2. Cast a cold eye on studies and experiments from which different workers elicit different answers.
3. If a claim is made for a phenomenon that violates one or more of the laws of nature, be doubly cautious.
4. Be skeptical of the opinions of experts outside their areas of expertise.
5. Be wary of scientists (and economists and theologians) who fall madly in love with their own theories.

S—Professor Dorothy U. Seyler's "logical fallacies" from *Read, Reason, Write* (1984). Generalization tests include causes *of illogic: egos, prejudices, resistance to change, a need for* answers. Fallacies resulting from oversimplifying encompass:[1]

- errors in generalizing
- the forced hypothesis
- non sequitur
- slippery slope
- false dilemma
- false analogy
- post hoc fallacy
- begging the question
- circular reasoning
- red herring
- straw man
- ad hominem
- appeal to authority
- common practice/bandwagon

N—Professor Paul Nickel's rules—drawn from life:

Admit ignorance and reserve judgment; irreverence is the beginning of learning and provides good perspective for models. If everyone believes it, it's probably wrong. Ask for evidence and test it. Evaluate tradeoffs—there must be tradeoffs. Look for counterintuitive evidence. Find the appropriate expert for testing evidence—scientists versus magicians to test paranormal claims? (Definitions, words, symbols, and evidence tests are all that stand between us and burning witches.)

FRSNs for skeptical thinking using contrarian, falsifiable, and counterintuitive writing assignments can be taught to students, using Judgment Day, end-of-the-world predictions by eminent environmental scientists and other experts. Millenarian predictions, along with interesting interpretations of murky chunks of Revelations and Nostradamus, can be used to add color to the writing exercises. Millenarians have grasped the use of environmental doom and crashed ecosystems as useful and persuasive reasons for their formerly vague, biblically interpreted, termination theories.

Strange bedfellows indeed, the millenarians and the environmentalists. Many of their dates with destiny based on environmental, population, resource, and ecological crashes of one sort or another have passed unnotably. Several predictions hover around the year 2000, although cannier prognosticators have cagily moved *their* date with doom well ahead into the twenty-second century—evidently to give themselves some wiggle room.

Fortunately, for the few skeptical process teachers, plenty of Nobel Prize winners and admired scientists are eager to provide millenarians with good reasons why the world will end. They have predicted its terminal date on both sides of the millennium. What a very satisfactory symbiosis—what a Dream Team—to teach students to question authority and themselves

Paul Nickel teaches in Michigan State University's Department of Resource Development. He consults on North American resource problems for the Government of Canada's Environmental Indicators Task Force and for MSU's Writing Center, Bailey Scholars' Program, and Quality of Undergraduate Instruction Program. He is a member of the Advancement of Sound Science Coalition, Washington, D.C. Address: 315 Natural Resources Building, E. Lansing MI 48824-1222. Nancy Shelton is a writer/editor who retired recently from the Defense Nuclear Agency, and a member of New Mexicans for Science and Reason. Address: 11617 Snowheights Blvd. NE, Albuquerque, NM 87112-3157.

in writing by using science process and logic tests on everyone's models, instead of uninstructive, though personally satisfying, bombast and Menckenian iconoclasm.

Writing assignments teach and enforce use of skeptical tools and reasoning. Using FRSNs in writing gives students the useful skills of applying the scientific process because writing makes thought visible, and falsifies it with questions, counterintuitive evidence, anticommon sense, and rewriting. When students apply FRSNs, and they write and rewrite their reasoning and logic steps, they become more aware of their own flawed logic and violations in reasoning and reaching conclusions. They also become less passive and gullible and more aggressive in fact-finding as they come to suspect that the most authoritative journal article can be as erroneous as a *National Enquirer* story, but not as sensational.

Dirty Tricks

"My Very Own Favorite Doom Model I Believe Wholeheartedly" is the title of a short research paper assigned early in the semester. Accurate description, documentation, and authorities are required. Other early assignments, "What Is Erosion and Why I Hate It," followed by "Why I Love the Grand Canyon" and "How I Explain the Difference Between My Two Points of View," bring audible groans from the students along with awareness that even their teacher is untrustworthy, and one should (must) question authority.

Testing End-Of-The-World Predictions with the FRSN: Did the Predicted Outcome Actually Happen?

One skeptical test is, simply, "Did the predicted outcome occur?" We are grateful to Rachel Carson (*Silent Spring,* 1962) for alerting us to dire consequences had we continued to use pesticides indiscriminately. On the other side, a Nobel Prize winner, George Wald, in 1975 predicted the end of the world in 1985. Paul and Anne Ehrlich predicted the end from starvation and overpopulation in their series, *Population Explosion, Population Bomb* (Ehrlich and Ehrlich 1968). Sadly, even admirable microbiologist René Dubos in 1972 predicted overindustrialization as the reason for the world's end in 1997, hitting a little close to home for comfort (Dubos 1972). The cover of the *Bulletin of the Atomic Scientists* showed a doomsday, atomic apocalypse clock for decades until the Cold War ended.

By projecting population consumption "scientifically"—using computer models—the Club of Rome predicted a 1980s end of the world from energy, raw material, and mineral shortages and depletion. When its doom model failed, the club recovered nicely and explained why its prediction crashed. The club claimed its work had miraculously alerted the world and converted everyone to needed wise resource use thus avoiding The End. It's not that the predictions couldn't happen or may not happen, but the proper teacher speaks in terms of models that suggest certain consequences instead of demonstrating his or her own "fully tested and true" beliefs and models. The errors of those who attempted to prove their models right—not wrong—provide wonderful lessons for students to learn. If you really want to advance knowledge (or at least information), reserve judgment, be modest, admit ignorance, test models using writing assignments, and falsify the models.

A Second FRSN: Identify an Objective Function

Teach students to recognize—and require of doomsayers or of any scientific hypothesis—a specified objective or independent function, perhaps the predicted date of the world's end, and subsequently determine by "test" if the predicted end happened. It's hard to make the end of the world a "relative," instead of an "absolute," event for equivocation and argument. Doom dates do at least establish an objective function to be tested—did the world end on the specified date or not?—whether predicted by Indiana Millerites,[2] the Ehrlichs, Rachel Carson, Club of Rome, Cornell ecologists, a $60 student textbook, or by the Branch Davidian's self-fulfilling prophecy (with the help from weapon suppliers, the Federal Bureau of Investigation, and the Drug Enforcement Agency).

A Third FRSN: Defining an Objective (Independent) Function: 'The Planet Is Running Out of (fill in the blank) in the Year (fill in the blank)'

Fears of "running out" of resources, energy, and even farmland are examples in which a FRSN objective function may be usefully tested. Does the term *reserves available* in textbooks mean "physical supply of all resources of all qualities and all grades everywhere" including *undiscovered reserves,* which could be used up at some future date? Or does *reserves available* mean "the inventory" that is technologically and economically available now, but which will change (though probably be maintained) as prices, scarcity, discovery, and substitutes maintain a "floating inventory" for use as the planet moves along into the future? I certainly don't know, but definitions are important for testing purposes. The world's "known" mineral "reserves" have actually increased since World War II, right along with the Ehrlichs' feared population increase to 5.5 billion people. Indeed, food and resource prices—discounted for inflation—have decreased, despite the Ehrlichs' population explosion.

The Ehrlichs and Julian Simon (1984), an economist, made a bet based on their respective positions, "running out" versus "plenty of," using a mix of metals prices at the end of a ten-year period as their objective, or independent function.[3] The former honorably paid up recently as the drop in prices at the end of the period confirmed "plenty of" vs. scarcity despite the vast population increase. Will this be an example of economists' and other experts' hubris too? Are there alternative explanations for the drop? Admitting ignorance and reserving judgment are definitely the best positions for teachers of evidence-testing.

Against the ideas of running-out-of and disappearing farmland is the notion of production systems having many inputs, including hybrid seed, double- (even triple-) cropping, capital, fertilizer, pesticides, transportation and storage systems, water, and increased CO_2 (ask your local greenhouse manager how they add CO_2 to make plants grow a *lot*). Also ask if global warming could do that too. Indeed, if crop disease control in Africa is ever accomplished, reportedly usable farmland equal to the area of the United States will be added there. Testing a specified objective function with a lot of FRSNs using available data enables students to accept or reject claims of pop, green-doom projections.

Students also learn to specify the time period modelers give for running out of resources. Is the short run (human and governmental policy time) being indicated by the modeler, or is the long run (geologic time) being specified? Besides learning to specify if the prediction is short run or long run—or if the modeler failed to specify a doom date at all—students learn the valuable but rarely used FRSNs: Use the right expert (perhaps a geologist or economist as well as a biologist?); and test to prove the theory wrong.

Other useful FRSNs include Seyler's Forced Hypothesis (Seyler 1984) and the requirement to look for alternative explanations and opposing evidence. For example, are increasing absolute numbers of cases (as opposed to incidence and rate) of various cancers caused simply by a longer-living population? Long enough perhaps to encounter cancer—most prevalent in older folks—whereas previously, pandemics carried the younger people off much earlier so they never reached cancer age? Milton Rothman's (paraphrased) FRSN—big claims require big proof—is a useful test of toxicant and death-dealing pollution claims as well. This is particularly so when sampling is questionable. Paul Nickel's Rule (1993)—sampling is *always* questionable—leads to another Nickel Rule: Always question to see if data have been "mined" for selective data, overlooking contrary evidence.

Richard Feynman (1989) warned Caltech researchers about "The Retroactive Falsification Fallacy," wherein we "refine" models, "mine" data, and deceive ourselves. The Ehrlichs' "bang" models come to mind here in which a population claim, arguing by analogy from insect to human populations, is pursued until, someday, maybe, the bang models will prove true, and the Ehrlichs, like Branch Davidians in their closed system, will get it right! Testing is all and testing is fun if you teach the tests to students, even offering one's own "author anonymous" article for them to savage in order to teach them to question authority.

Examples of other FRSNs include Rothman's "Beware of Experts Outside their Area of Expertise" (including scientists). Malthus, useful as he was, was a pastor, not a demographer. As several CSICOP experts—including James Randi, Ray Hyman, Joe Nickell, and others—have noted, you have to use the right expert. The right expert for most psychic claims is a magician, not a physicist.

The *National Enquirer* (1992) presented a highly testable environmental science ozone story by Philip Smith,[4] but is it falsifiable? Students can be taught to test the devastating impact of a wandering ozone hole over Punta Arenas, Chile, from which the tabloid reported fish and cattle were blinded, crazed, and starved, while horses became polka dotted and trees died overnight, along with commonplace claims appearing of human melanomas usually caused by "toxicities" and "pollutants." Such claims beg to be tested by students with FRSNs of Look for Alternative Explanations (fungus *does* cause horse polka dots) and the full array of the SKEPTICAL INQUIRER's James Lett's (1988) tests: Logic, Sufficiency, Comprehensiveness, and Replicability.

Perhaps the animals were in heat; sick; the fish spawning. Can an upper stratosphere ozone hole be "blown" around? Were 60 previous years of sunbathing the cause of melanomas? Which scientific "experts" made the claims, and why didn't the events happen in other places beneath the mobile ozone hole? The article gives students a fine workout with FRSNs and also exposes their own personal, dangerous hubris about "Joe and Jane Sixpack," who, students contend, unlike themselves, might actually believe such stuff. Interestingly, students are indignant that their teacher uses a *National Enquirer* article.

The comeuppance for students occurs in the last question of one writing exercise: "Would you believe the windblown ozone hole claim if it came from a 'respectable' and 'authoritative' scientific source?" Replies are split, but students have increasingly answered no, they wouldn't. Those who said yes explained that *Nature, New Scientist,* and other respectable sources can be relied on, a dubious attitude perhaps in view of many questioned or retracted articles recently in several authoritative periodicals.[5]

Obviously, too, students and everyone else already *do* believe the general ozone hole model simply because it is a respectable conclusion that is believed by experts to be true and accurate. (In fact, the scientific work that identified chemical reactions that can lead to depletion of ozone in the stratosphere brought the three codiscoverers the 1995 Nobel Prize in chemistry, announced October 11, 1995.)

The capper to the exercise is citing Vice President Albert Gore's book *Earth in the Balance* (1992), although students report to this author they are increasingly skeptical of this popular source of green doom as respectable scientific data. The book, like the *National Enquirer,* reports cataracts, skin cancer, and blind Patagonian animals and fish, suggesting the cause is upper atmosphere goings-on. Doubtless this essay is unfair to students, Al Gore, and others, but it can be used to illustrate a mean-minded and unfair logic-chop test. Actually, a surprised August 21, 1993, *New Scientist* reported on a Johns Hopkins University team of scientists, who, after investigating, suggested an alternative explanation for these specific ozone happenings as being a virus, not an empty hole, over Punta Arenas, Chile. Point: Test the most *and* the least authoritative articles. Test *everything.*

'Tradeoffs': Another Useful Skeptical Test

Consideration of tradeoffs is also very useful in having stu-

dents evaluate doom models and predictions related to chlorine use. The U.S. Environmental Protection Agency's zero-tolerance reports assert that chlorine (a chemical widely used to purify water) produces cancer risk in certain amounts. Less responsible green-doom models claim that chlorine causes "gender shift" or "homosexuality," and "short penises."[6] In light of these reports, students are asked to comment on the need for thoughtful evaluation of "relative" and "absolute" risk of tradeoffs among policy choices on chemical and economic alternatives in water treatment policy.

Relying on environmental models, chlorine elimination was called for in the Great Lakes based on "weight of evidence" as opposed to more guarded, tedious, and self-doubting models using severe, scientific process.[7] When Peruvians stopped chlorine use for water purification they reportedly used EPA's models for justification, claiming that the small cancer risk justified the halt of chlorine purification. (Some cynics suggest Peruvians were looking for a way to save money.) The result was thousands of cholera deaths and tens of thousands—if not hundreds of thousands—of cholera victims treated depending on whether one accepts the "spread effect" reports. (Note that advocates of eliminating chlorine recently claimed they were misquoted and indicated they meant to *retain* use of chlorine for water purification.) This explanation allows the alert teacher to raise questions about using Lett's "honesty test" and, as well, the fatal flaw of which Richard Feynman warned. Our ability to deceive ourselves was superbly demonstrated at both the 1994 and 1995 CSICOP workshops on critical thinking and human error,[8] featuring Ray Hyman, Barry Beyerstein, Louis Pankratz, and Jerry Andrus.

The premier, all-time, great FRSN, of course, is Lett's rule (or Karl Popper's [1959] falsification test).[9] At the end of a semester of tirelessly applying the tests to everything and everyone else, students are suddenly jolted by being required to prove their own favorite environmental model to be *wrong* in a documented, "authoritative," article. To falsify the model, they use files full of authoritative articles from *New Scientist, Nature,* etc., which generally treat models, theories, hypotheses, and scientific speculation as such instead of as gospel.

A final, most useful teaching exercise is helping students use Ray Hyman's Charity or Courtesy Principle (Hyman 1989) to formulate what would be scientifically acceptable "proof" of the claimant's favored model or claim, rather than debunking it.

The startling shock of having to disprove one's favorite environmental model is arguably the finest learning experience most students and professors have because students learn scientific process attempts to prove its models wrong—not right. One learns more that way. Making mistakes, and recognizing them, is more important than rote memorizing in education. The process works because cognitive dissonance is created between what the students already believe and what reasoning, logic, and evidence establish.

Forcing students to prove fondly held, unquestioned, pop environmental models and beliefs wrong—falsifying them—is the beginning of bitter, sober, and somber questioning, true, modest learning, and learning to learn. In general, too many environmental scientists, and respectable learners such as Vice President Gore, strive mainly to prove their models and themselves right. Consequently, their work resembles legal briefs more than research.

The tension of cognitive dissonance in the exercises, I believe, also sets the use of FRSN tests in students' reasoning—forever. If thinking is the manipulation and testing of ideas and data leading to a cultivated mind, then students' written responses applying FRSNs show gratifyingly that happens—as demonstrated at the end of one student's paper: "Wait! I've changed my mind and I want to change my answer but there isn't time. Help!"

With such comments it is reasonable to consider that structured thinking and testing have gone into the papers and into the frequent writing and testing practice.

Notes

1. All terms are annotated in student handbook.

2. Millerites repeatedly miscalculated a biblically based Second Coming, giving away property while waiting to be "swept up." Unfazed by repeated failure, they reinterpreted their biblical sources to redesignate "the day" late in the last century. Millerites, followers of William Miller (1782-1849), initiated the Seventh-Day Adventist church in 1860. Miller predicted the second coming of Christ would take place in 1843.

3. See *Wall Street Journal,* June 5, 1995, "When the Boomster Slams the Doomster, Bet on a New Wager," by Charles McCoy.

4. *National Enquirer, Nature,* and *New Scientist* are among diverse files available to students.

5. *Forbes*'s cover story, "The Health Scare Industry," August 14, 1995, by Philip E. Ross, refutes recent diet and lifestyle advisories.

6. See "Toxic Threat" in *Ann Arbor News,* February 17, 1994, by David Poulson.

7. The Great Lakes region has considerable experience with a polluted water supply going back to the late 1800s when the Chicago River was reversed to "flush" waste into the Mississippi to halt the epidemics of cholera and typhoid that at one point killed 12 percent of Chicago's population.

8. See SKEPTICAL INQUIRER 19(3) (May/June 1995): 6-7, for a report by J. P. McLaughlin on the 1994 Boulder, Colorado, workshop; and 20(3) (May/June 1996): 21-22, for a report by N. Shelton on the 1995 Eugene, Oregon, human error workshop.

9. Earman, J. 1986. *A Primer on Determinism,* pp. 8-10, is negative to Popper.

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Alternative Health Education and Pseudocredentialing

The healthcare marketplace is fraught with "credentials," some legitimate, some overrated, some dubious, and some far afield of science.

JACK RASO

The next time someone who is not your spouse, lover, or trusted physician asks you to disrobe, spit, or urinate, think twice. And hold on to your wallet or purse. Quackery is going strong on the coattails of alternative medicine and has its own "credentials."

In the healthcare field, a *quack* is anyone who falsely claims medical skill. Some opponents of health fraud use the word to denote practitioners ranging from nonprofessionals bereft of medical skill who profess it, to physicians who make unfounded claims for methods they employ or preparations they administer. Nowadays, few quacks in the United States pretend to be M.D.s or osteopaths (D.O.s, who are equivalent to M.D.s). Providing fraudulent medical degrees is a high-risk business, and medical licensing procedures are stringent. However, practicing and would-be quacks can become "doctors," or at least diplomates, through a variety of correspondence courses.

Credentials and "Credentials"

The healthcare marketplace is fraught with "credentials," some legitimate, some overrated, some dubious, and some far afield of science. A bona fide credential is any evidence that one is trustworthy or has authority. However, since authority does not guarantee trustworthiness, whether a credential deserves confidence depends ultimately on whether the tenets that underlie the credential are worthy of confidence. "Authority-type" healthcare credentials range from the science-based (e.g., podiatric [chiropodist, or "foot doctor"] licensure) to the controversial (e.g., naturopathic licensure).

Credentials encompass (1) achievements and (2) documents that attest achievements. Many consumers mistake documentary (usually paper) credentials for proof of skill. Often, these are merely proof of past enrollment in an academic program, not proof of erudition or skill. Educational credentials are the professional standard because academic standing is more quantifiable than knowledge or skill. The most commanding educational credential, and therefore the most tempting to would-be misusers, is the doctorate. There are many types of doctorates, but all are categorizable as "traditional" (e.g., a nonhonorary Ph.D. degree), "professional" (e.g., an M.D. degree), and honorary (e.g., a D.Sc. [Doctor of Science] degree without academic status). Some types of doctorates in each category are considerably more doubtful than others. For example, *Bears' Guide to Earning College Degrees Nontraditionally* (1995) lists as controversial "professional degree titles": D.Hyp. (hypnotism), Graph.D. ("Graphoanalysis"), and H.M.D. or "M.D.(H.)" (homeopathy). Many such degrees are available throughout the United States.

In 1978, Kurt W. Donsbach (pronounced "donsbah"), D.C. (Doctor of Chiropractic), founded Donsbach University, which offered correspondence courses leading to bachelor's, master's, and doctoral degrees in nutrition. Electrical engineer Gary Pace obtained a Ph.D. degree from this nonaccredited school before it was renamed, in the late 1980s, the International University for Nutrition Education (IUNE). Pace practiced as a "nutritional consultant" on Long Island, New York. In 1985, his ad in the Nassau County (New York) Yellow Pages stated that one could determine one's "true vitamins, minerals, enzymes and glandular needs" from such tests as "hair and diet analysis," "herbal saliva," and "computerized urine and vascular analyzer." That year, then New York State Attorney General Robert Abrams filed a civil suit against Pace, accusing him of practicing medicine without a license, false advertising, and illegal use of educational credentials. Abrams said that at least 251 clients had paid Pace an average of $317 in the previous four years. According to the lawsuit, Pace had massaged women's feet, had sometimes performed lengthy and/or private mammary and vaginal exams, and had routinely requested a hair specimen (sometimes pubic). Finally, an injunction prohibited Pace from practicing medicine unlawfully and from publicizing his doctoral status.

IUNE operates as a nonaccredited "distance learning" institution in Chula Vista, California. It offers, for example, programs that lead to a Ph.D. degree in "Clincial Nutrimedicine and Biological Sciences." Majors include "nutri-medical dentistry," "nutri-medical eye and visual health care," "nutri-medical homeopathy," and "therapeutic nutrimedicine." Five of the thirteen members of IUNE's core faculty hold graduate degrees from Donsbach University and/or IUNE.

Also in 1985, a congressman opposed to quackery announced that he had become "Dr. Pepper": Claude Pepper had obtained a Ph.D. degree in psychology from Union University, Los Angeles, the nonaccredited correspondence school from which Donsbach has claimed a Ph.D. degree in nutrition. Pepper said that about half a million Americans had purchased unearned "credentials."

Does an ill-conceived system of academic accreditation lull consumers into accepting health-related rubbish and disinformation?

Who's Minding the (Academic Department) Store?

Accreditation is an especially thorny matter concerning alternative health education, which encompasses: (1) indoctrination in alternative healthcare (or occult medicine), in particular methods thereof, or in sectarian religious "healing"; (2) nontraditional academic programs that afford such indoctrination; and (3) nontraditional academic programs in science-oriented healthcare. Academic accreditation is recognition, by an agency or association, that an educational institution, university school, academic department, or academic program meets the reviewing body's administrative, organizational, and fiscal criteria. The many accrediting agencies, associations, bodies, commissions, and groups in the United States range from the reputable to the spurious. The U.S. Secretary of Education and the Commission on Recognition of Postsecondary Accreditation (CORPA), a nongovernmental organization, autonomously decide whether (1) to grant recognition to any functioning or would-be "accreditor" that expressly wants it, or (2) to withhold or withdraw it from such an entity. In practical terms, recognition constitutes publicizing acceptance of such an entity as an accreditor. (CORPA succeeded the Council on Postsecondary Accreditation on January 1, 1994.) Accreditation by accreditors "recognized" by either of the aforementioned organizations indicates only relative organizational soundness and intradisciplinary programmatic soundness. It is by no means a guarantee that the teachings of the accredited entity are consistent with science. "Recognized" accreditors comprise: (1) six regional accrediting bodies, which have the authority to accredit colleges and uni-

Jack Raso, a registered dietitian, is the author of Mystical Diets: Paranormal, Spiritual, and Occult Nutrition Practices *(1993) and* "Alternative" Healthcare: A Comprehensive Guide *(1994), both published by Prometheus Books; coeditor of* Nutrition Forum *newsletter, also published by Prometheus Books; and a board member of the National Council Against Health Fraud. He is vice president of the council's New York State Chapter and coordinator of its Task Force on Dubious Healthcare Credentials.*

versities in respective regions of the United States; and (2) a motley group of more than fifty "national, professional, and specialized" accrediting bodies. The latter group includes accrediting entities for schools that specialize in and endorse Christianity, Judaism, chiropractic, naturopathy, and traditional Chinese medicine. Nevertheless, accreditation by a recognized accreditor at least weeds out fly-by-night and financially shaky organizations. Thus, absence of such accreditation is grounds for suspicion.

Brad Marshall

Pseudocredentials Galore

Published studies conducted since the mid-1980s, an annual (*New Age Journal's 1995–1996 Holistic Health Directory*, published in Fall 1995), and several books—notably the 336-page twelfth edition of *Bears' Guide to Earning College Degrees Non-traditionally* (Benicia, California: C and B Publishing, 1995) and the 200-page second edition of *The Common Boundary Graduate Education Guide: Holistic Programs and Resources Integrating Spirituality and Psychology* (Bethesda, Maryland: Common Boundary, 1994)—suggest that healthcare-related pseudocredentialing is rampant. Pseudocredentialing includes: (1) providing certificates, degrees, diplomas, and titles in a particular field to persons who have not demonstrated competence, erudition, or expertise in that field; and (2) providing a paper facade of medical know-how to persons whose course of study in the field of the "credential" had inadequate scientific content.

Pseudocredentialism is a byproduct of credentialism, which is overemphasis on documentary (particularly educational) credentials as prerequisites to employment or as augmenters of upward mobility. In the healthcare field, where competence often is a life-or-death concern, emphasis on certificates, degrees, and licenses, which facilitate ruling out unqualified job applicants, usually does not seem undue. In some cases, however, it does seem distorted. For example, between mid-1987 and 1993, I worked in two healthcare facilities where food-service managers who were not health professionals—they were not registered dietitians (R.D.s) and did not have a graduate degree—had authority over chief dietitians who were R.D.s with healthcare-related master's degrees.

While credentialism shortchanges some contributors to society and inappropriately aggrandizes others, pseudocredentialism tends to cheat all consumers. It encompasses: (1) the "for-profit" use of "credentials" obtained from pseudocredentialing organizations and (2) the misuse of bona fide credentials (e.g., registration with the Commission on Dietetic Registration—R.D. status) in an area where these credentials have little or no importance (e.g., medical diagnosis).

"Credentials" listed uncritically as "professional titles" in *The Common Boundary Graduate Education Guide* include: Acupuncture Physician (Ac. Phys.), Certified Acupuncturist (C.Ac.), Certified in Classical Homeopathy (C.C.H.), Diplomate in Homeotherapeutics (i.e., homeopathy) (D.Ht.), Doctor of Acupuncture (D.Ac.), Doctor of Oriental Medicine (D.O.M.), Homeopathic Medical Doctor (H.M.D.), Licensed Acupuncturist (L.Ac.), Master of Acupuncture and Oriental Medicine (M.Ac.O.M.), Naturopathic Medical Doctor (N.D. or N.M.D), Oriental Medical Doctor (O.M.D.), and Registered Acupuncturist (R.Ac.). Because the predominant forms of most or all of the methods that underlie each of these "titles" lack scientific substantiation, I consider them pseudocredentials—signs of shaky philosophies that inspire little or no confidence in the scientific community.

Below I describe several relevant studies.

• In early 1986, the National Council Against Health Fraud (NCAHF) published the findings of its study of practitioner listings in the Yellow Pages under the headings "Dietitians" and "Nutritionists" within the preceding four years. The principal finding of this study, which covered 41 areas of 17 states, was that only 13 percent of 439 "nutritionists" appeared qualified. Furthermore, 46 percent of 24 physicians listed in a subsection titled "Nutrition" (under the heading "Physicians

Suspicious Characteristics

Most providers of dubious credentials make good first impressions, and many have a streamlined (and therefore inviting) application procedure and minimal entrance requirements. These are not signs of pseudocredentialing but may put consumers off guard. To evaluate a "credentialing" organization, consumers often must penetrate a veneer of friendliness and/or respectability. Below is a list of characteristics that are, in my opinion, grounds for caution.

- The organization does not possess accreditation by an entity recognized by the U.S. Secretary of Education or CORPA.
- The organization claims accreditation, but neither the U.S. Secretary of Education nor CORPA recognizes the accrediting entity.
- Potential enrollees must pay to receive a course catalog.
- Consumer telephone requests for printed information elicit requests for prerequisite autobiographical letters.
- Literature from the organization does not specify the location of its headquarters.
- The organization has changed its address more than twice within ten years.
- Letters, postcards, or phone calls from the organization foretell a fee increase. During my 1994–1995 study, one program director, a naturopath who evidently thought I was a potential enrollee, spoke of such a deadline in three messages on my answering machine.
- The organization makes offers of substantial tuition discounts with short time limits. An introductory mailing from the University of Metaphysics postmarked July 12, 1995, included a "half-price tuition offer" expiration-dated July 31, 1995. In a follow-up mailing, postmarked July 20, 1995, the university added to this offer a free meditation course and a "Beautiful Doctoral Graduate Lapel Pin To Wear Proudly." (See below.)
- The organization mails unsolicited partial-scholarship applications to potential enrollees who have not requested a scholarship application. A mailing from the University of Metaphysics (see above) postmarked September 8, 1995, included an unsolicited scholarship application whose deadline was September 30, 1995. Persons who were unemployed, disabled, or retired, or who had a financial reason for not enrolling, qualified—with prepayment by September 30, 1995—for a tuition discount of approximately 90 percent. A "*last minute* scholarship reminder" followed.
- The organization offers a degree with a nonstandard wording. Examples are "Doctor of Holistic Health" (H.H.D.) and "Doctor of Naturology" (D.N.).
- The person who answers the phone for the organization does not immediately state the organization's name.
- Prerequisites for admission are trivial, very flexible, or nonexistent.

and Surgeons") were "clearly spurious," and none appeared qualified as nutritionists. Their offerings included acupuncture, chelation therapy, life extension, orthomolecular medicine, and orthomolecular psychology.

• In a comprehensive 1992–1993 Yellow Pages study sponsored by the NCAHF, Ira Milner, R.D., collected data from 64 areas of 32 states. The principal finding was that consumers had less than a fifty-fifty chance of finding a reliable "nutritionist" through the directory. Task-force volunteers consisted of registered dietitians, public health nutritionists, dietetic interns, and postsecondary nutrition students. They categorized 21 (9 percent) of the 231 businesses listed under the heading "Dietitians" as "spurious." These included Diet Center facilities, health food stores, multilevel-marketing distributors, a nutritionist with a dubious doctorate who practiced iridology (a pseudodiagnostic method involving examination of the iris), and a former vitamin company salesman who used hair analysis.

The "credential" initials used by dubious nutrition practitioners included: C.C.N. (Certified Clinical Nutritionist), C.N. (Certified Nutritionist), C.N.C. (Certified Nutrition Consultant), N.C. (Nutrition Counselor), N.M.D. (Doctor of "Nutrimedicine"), N.D. (Doctor of Naturopathy), O.M.D. (Doctor of Oriental Medicine), H.M.D. (Homeopathic Medical Doctor), C.C.T. (Certified Colon Therapist), R.C.T. (Registered Colon Therapist), C.M.T. (Certified Massage Therapist), and M.L.D. (Manual Lymph Drainage).

In September 1992, I telephoned all businesses listed under the headings "Dietitians" and "Nutritionists" in the 1992–1993 NYNEX Yellow Pages for the borough of Queens, in New York City. Only one of the 26 businesses listed seemed a reliable source of nutrition information; at least seven were health food stores or dietary-supplement distributors. A self-styled "certified eating-disorder specialist" told me he prescribed dietary supplements. When I complained of tiredness, he declared that tiredness is "the first sign of illness." A practitioner of "holistic nutrition" also said he prescribed such supplements and stated he had an N.D. degree "from Puerto Rico." (There were, and are, no accredited naturopathy degree programs in Puerto Rico. And any naturopathy degree is a sign of pseudoscience.) I asked where I could buy the supplements, and he said he had a "warehouse" in his office.

• In early 1994, the publishers of *Nutrition Forum* newsletter sponsored a follow-up to the 1992–1993 Yellow Pages study. In the follow-up, Milner decided that 17 of the 24 self-described Ph.D.s listed under the heading "Nutritionists" held "phony" Ph.D. degrees. Apparently, eight of the dubious doctorates came from nonaccredited correspondence schools (five from Donsbach University or the International University for Nutrition Education); one came from a nonaccredited college that required attendance; and one came from the "Clayton School of Homeopathy."

• In a spinoff of the 1992–1993 Yellow Pages study, I examined promotional mailings from diverse providers of alternative health education. Between mid-July 1994 and February 27, 1995, using *Nutrition Forum* letterheads, I mailed a one-page itemized request for perusable information and a one-page questionnaire to 50 "credentialing" organizations with addresses in 23 states. Selection of organizations was arbitrary. However, all had offered health-centered or customizable academic programs within the previous seven years. By February 26, my associates and I received course descriptions from 27 organizations, including questionnaire responses from eleven. Each of these organizations offered at least one academic program that: (1) covered human health and nutrition, or was adaptable to such a focus; (2) did not involve attendance, or required short attendance; and (3) culminated in a certificate (certification), a nondegree diploma, or a gradu-

ate degree.

The following findings pertain to the 27 organizations from which we received course descriptions during the aforementioned period.

At least 21 (78 percent) offered correspondence programs. Degrees available through nutrition-related correspondence programs included: Doctor of Divinity (D.D.), Doctor of Holistic Health (H.H.D.), Doctor of Naturopathy (N.D.), Doctor of Philosophy (Ph.D.), Doctor of Science (D.Sc.), and Doctor of Naturology (D.N.). ("D.N." also represents two other nutrition-related pseudocredentials: the degrees of "Doctor of Naprapathy" and "Doctor of Nutripathy.") A "Master Herbalist" (M.H.) diploma was likewise available through correspondence. Obtaining a "Health Educator" (H.E.) certificate required attendance at an institute for eight consecutive weeks. The H.E. certificate, the M.H. diploma, and all the aforementioned correspondence doctorates were not trustworthy.

Twenty of the organizations (74 percent) lacked (and still lack) accreditation by an entity recognized by the U.S. Secretary of Education or CORPA.

Six of the organizations (22 percent) claimed accreditation by entities not recognized by the U.S. Secretary of Education or CORPA.

Below I contrast two providers of alternative health education.

The Herbal Healer Academy

Founded in 1988, the Herbal Healer Academy (HHA) is nonaccredited. It has a letterbox in Mountain View, Arizona. I learned of the academy from a mailing (Health Pak) I received in October 1995. HHA's Health Pak card quoted its founder and director, Marijah McCain, N.D., M.H. ("Master Herbalist"), "DIHom" (evidently a homeopathic "credential"): "Our Members Save Thousands in Doctor Bills! Some Members Save Their Lives!!!" HHA's "special" offer was "private" lifetime membership for $5. The mailing I received the following month for $5 included a laminated membership card, a copy of HHA's Fall 1995 newsletter (whose "front-page headline" was ". . . And God Gave the Herbs for the Healing of Mankind"); an interview with a nonpracticing chiropractor, titled "Essiac: Nature's Cure for Cancer"; a catalog of dietary supplements; a "Natural Medicine Supply Catalog"; and order forms. The latter catalog offered correspondence courses leading to certificates in acupuncture, Bach flower therapy, foot reflexology, "herbology," and hypnotherapy. The acupuncture course covered "electrical acupuncture," "electrical acupressure," "five element theory," "meridians," "Oriental diagnosis," and "Yin/Yang science." The "herbology" course covered reflexology. The hypnotherapy course covered neuro-linguistic programming (N.L.P., a quasi-spiritual "performance psychology" technique). The "Natural Medicine Supply Catalog" also stated that McCain had diplomas in aromatherapy, homeopathy, and Touch for Health (an offshoot of applied kinesiology), and that she had trained with "an outstanding Brazilian psychic surgeon." There were no prerequisites for admission to any of the courses. At least two of them did not have a time limit for completion.

The main question here is not whether HHA's manner of "credentialing" by correspondence is technically sound, or whether its certificates represent proficiency. The nuts and bolts of an academic program are immaterial if its teachings are unfounded. The main question is: Do the certificates represent science-oriented learning, or indoctrination in unscientific methods? In other words, are they credentials or pseudocredentials? Are students learning facts about methods, absorbing propaganda, or simply learning little? To all appearances, HHA wants to attract would-be practitioners of the methods that are the courses' subjects. Certainly Bach flower therapy, foot reflexology, and traditional Chinese acupuncture lack scientific support ("Yin/Yang science" is an oxymoron). Thus I conclude that the academy is in the business of indoctrination, not education.

California College for Health Sciences

The main question regarding California College for Health Sciences (CCHS), in National City, California, is different: The question is whether the school's manner of credentialing by correspondence is sound. In other words, do its degrees represent proficiency?

CCHS is accredited by the Accrediting Commission of the Distance Education and Training Council, which is recognized by the U.S. Secretary of Education and CORPA. Last summer I applied to the school's Master of Science correspondence program in Community Health Administration and Wellness Promotion. (It also offers health-related correspondence programs leading to the degree of Associate or Bachelor of Science.) The application procedure was a breeze. There were only two entrance requirements: (1) a baccalaureate from an accredited school and (2) completion of an introductory psychology course. Graduation requires completion of 36 semester credits, 27 of which the enrollee must complete at CCHS. The school admitted me to the program within a month of my applying.

In October 1995, I enrolled in the first course in the core curriculum: "Ethical Considerations in Healthcare Delivery." Designed for the course and published by CCHS, the colloquial, 380-page textbook, *What Is a Life Worth?* (1993), is interesting despite grammatical imperfections, stylistic flaws, and typographical errors. But it's not especially user-friendly. Earning the self-contained course's three credits requires only that the student pass: (1) five "open-book" exams, which consist of multiple-choice and true-false items; and (2) a "closed-book" final exam, consisting of 100 items (most multiple-choice, some true-false), that must be supervised by a "responsible individual" who does not have a personal or professional "direct involvement" with the examinee. This is, in effect, an honor system. Students may take the final exam three times.

In November 1995, I phoned the college and inquired whether my primary candidate for proctorship was eligible. I

described her as a medical librarian who (1) worked at my former place of employment and (2) was a member of the editorial board of the newsletter I coedit. The woman at CCHS told me that the librarian could be my proctor.

The five "open-book" exams are half the basis of the final grade. To pass them, one need only search the textbook sections titled "Study Questions and Answers."

"Believing Is Magic"

Later in November, I enrolled in another course, titled "Health Psychology." Unlike the ethics course, this psychology course has a final project requirement, which involves interviewing five patients in a clinic or hospital regarding their pain. Supervision is not mandatory. The project is half the basis of the final grade. The course materials, which I received in December, included a 114-page booklet titled *Developing Self-Esteem: A Guide for Positive Success* (Menlo Park, California: Crisp Publications, 1994). My first assignment, in effect, was to "attempt" to do all the exercises in the booklet and mail the "completed" booklet to the school. The exercises, which are self-inventories, have no bearing on the final grade. On page 44, the author declares: "Believing is magic."

"In early 1995, The New Seminary . . . offered 'The Physician of the Soul Program,' a videotape course whose subjects included such 'spiritual approaches to healing' as: 'Homeopathic Healing,' . . . 'Quantum Healing,' rebirthing, . . . and 'Therapeutic Touching.'"

Because it has an easygoing exam system, requires only one internship (a three-credit course), and does not have a thesis requirement, the CCHS Master of Science degree may be more acceptable as an adjunctive credential than as a "stand-alone" master's degree. Nevertheless, I like the school's organized, uncomplicated, low-cost, continuing-education approach. For credentialed health professionals employed in a healthcare facility, the M.S. program may be worth a try.

"X-Filed"

Since early 1989, I have collected a wealth of promotional literature from assorted providers of healthcare "credentials." Below I describe thirteen of the many nonaccredited healthcare "credentialing" organizations that my 1994–1995 study did not cover.

• In early 1995, **Advanced Neuro Dynamics,** in Honolulu, Hawaii, offered in-state and out-of-state "Master Practitioner Certification Training." This afforded "Master Time Line Therapy Practitioner Certification" by the Time Line Therapy Association. Time Line Therapy (T.L.T.) is a group of "techniques," one of whose premises is that people store their "experience of time" on a line in space. Journeying on this so-called timeline to the past and future allegedly charges one's "life-energy" and prepares one for the "incredibly powerful magic" of Huna, an esoteric tradition native to the Hawaiian Islands.

• In 1989, the **American Association for Parapsychology** (AAP), in Canoga Park, California, offered "A Complete Course in Parapsychology." This correspondence program led to a certificate of membership and a diploma. It featured such subjects as radiesthesia ("used in medical diagnosis"), psychometry (object reading, a form of divination), and "spiritual healing." In July 1995, AAP was offering a Doctor of Metaphysics "external degree" program through the American International University (AIU), a nonaccredited organization with which it shared a post office box. The program led to a Ph.D. degree.

• In 1993 and late 1994, the **American Society of Alternative Therapists** (ASAT), in Rockport, Massachusetts, offered the "Holistic Health Counseling (H.H.C) Certification Home Study Program," a twelve-videocassette course that led to: (1) a "certificate of certification in Holistic Health Counseling (C.H.C.)" from ASAT, (2) a "Diploma in Transformational Counseling" from the Institute of Transformational Studies, and (3) membership in ASAT for one year. Transformational counseling is a system of "facilitation" that encompasses "dream therapy," "parts therapy," "progression/regression therapy," and "psycho-neuro integration" (P.N.I). A purported aim of P.N.I. (also called psychic healing) is the "recharging" and realignment of "subtle energy centers." Apparently, the chief postulate of transformational counseling is that beliefs are the "real" cause of mental, physical, emotional, and "etheric" problems. ASAT was founded in 1990. In July 1995, it was still offering the "home study" version of its three-weekend course.

• For its 1991–1992 academic year, the **Atlantic Academy of Classical Homeopathy,** in New York City, offered a 500-hour classroom program that culminated in a "Certificate in Homeopathy (C.Hom.)." Previously, the academy had offered a "certification system" leading to a "Certificate in Homeopathic Therapeutics (C.H.T.)." Classical homeopathy involves extensive questioning of the patient by the practitioner, purportedly to determine the "single remedy" for that patient. The academy was founded in 1989. In August 1995, it had an "off campus" C.Hom. program.

• In 1993 and 1994, the **Barbara Brennan School of Healing,** in East Hampton, New York, offered the "4-year Professional Healing Science Training Program," which led to certification and "mastery in the practice of Healing Science." Barbara Brennan healing science is a "spiritual" system concocted by Barbara Ann Brennan, author of the best-seller *Hands of Light: A Guide to Healing Through the Human Energy Field* and *Light Emerging: The Journey of Personal Healing*, both published by Bantam. Her "science" is a form of so-called energy field work that involves "Core Star healing" and "Hara healing." (Some spiritualists use the Japanese

word *hara* to denote the *tanden*—the alleged seat of *ki* [supernatural "energy"] in humans, slightly below the navel.) According to the *1995–1996 Holistic Health Directory*, "the healer works to clear the client's [energy] field of unhealthy and blocked energies, charge depleted areas, repair distorted patterns, and balance the entire field." The school was founded in 1982. In July 1995, it was still offering the program described above.

• In 1990 and 1991, the **California School of Herbal Studies** (CSHS), in Forestville, California, offered an eight-week program on the West Coast that led to a "Certificate in Therapeutic Herbalism." The school also offered a correspondence course titled "Therapeutic Herbalism" (previously "Medical Herbalism") to "anyone interested in herbal health care." It described this course as similar to the former and as the cornerstone of "developing a practice as a medical herbalist." The school was founded in 1978. In mid-1995, CSHS offered an on-site "intensive training program" comprising two semesters: "Foundations of Herbalism" and "Therapeutic Herbalism." The program led to a "certificate of completion."

• In early 1995, **The DoveStar Institute** (also called the DoveStar Alchemian Institute), in Hooksett, New Hampshire, offered a program that led to certification as a "Reiki-Alchemia Therapist." Reiki-alchemia is a union of: (1) reiki, a variant of the laying on of hands that posits "Universal Life Force Energy," and (2) alchemia, a form of channeling that allegedly involves activating "Universal Fifth Dimensional Energy."

• In early 1995, **The Focusing Institute**, in Chicago, Illinois, offered a five-level curriculum that led to a "Certificate of Completion." Focusing is a "natural" stepwise system of "personal growth" based on the work of psychology professor Eugene (Gene) T. Gendlin, author of *Focusing* (Bantam Books, 1981) and *Let the Body Interpret Your Dreams* (Chiron, 1986). It involves "dreamwork" and "inner child work." The latter is a form of "psychotherapy" popularized by author and theologian John Bradshaw. The purported effects of Focusing include: direct contact with the (allegedly palpable) "wisdom" of one's body (i.e., prenatal "bodily meaning"); the flowing of "life's energy" in "new ways of being"; discovery of one's "genuine self"; and an increase in personal "whole[ness]."

• For its 1992–1993 academic year, the **Institute of Transpersonal Psychology** (ITP), in Palo Alto (previously in Menlo Park), California, offered two "M.A." correspondence programs: (1) the 21-month "Master of Arts in Transpersonal Studies (M.A.T.S.)" program and (2) the 27-month "Master of Transpersonal Psychology (M.T.P.)" program. Transpersonal psychology is a combination of Eastern mysticism, Jungian psychology, and psychosynthesis (a "spiritual psychotherapy"). Italian psychiatrist Roberto Assagioli, M.D. (1888–1974), originated psychosynthesis in 1910. Its purported design is to effect the "integration" and "growth" of the self and to release and direct "psychic energies" allegedly generated thereby. ITP was founded in 1975. By 1994, it attained a "preaccredited status" recognized by the U.S. Secretary of Education, and "Candidate for Accreditation" status with CORPA. The institute may achieve accreditation in 1998.

• In early 1995, **The New Seminary**, an interfaith "National Academy of Wisdom" in New York City, offered "The Physician of the Soul Program," a videotape course whose subjects included such "spiritual approaches to healing" as: creative visualization, "Homeopathic Healing," hypnotherapy, "Kabbalistic Healing," "Quantum Healing," rebirthing, reiki (a variant of the laying on of hands), shamanic healing, shiatsu, and "Therapeutic Touching." The course required attendance at a "one-day Intensive Retreat" and led to certification as a modern "Physician of the Soul." The seminary was founded in 1981.

• In early 1994, the **University of Metaphysics**, in Los Angeles, California, offered self-paced, "all home study" doctoral programs that led, for example, to a Ph.D. degree in "healing" and degrees in "holistic science" (Hsc.D.) and "metaphysical science" (Msc.D.). It advertised that its programs had but one prerequisite: "a sincere desire to improve the quality of human life." On July 7, 1995, I mailed a check for $5 to the organization's "communications address," in Studio City, California, for a "detailed Research Report" and "full details" of the "Doctoral Degree Program." The mailing I received about a week later included a letter from dean Paul L. Masters, Msc.D., in which he said a "Student Enrollment Drive" was in progress, enabling enrollment before August at half the regular tuition.

According to the so-called research report, titled "A Doctoral Career in Metaphysics" (1994, by Paul Leon Masters), (1) the International Metaphysical Ministry is the university's parent body; (2) the doctoral program is self-paced, and enrollees can meet degree requirements in less than a year; (3) upon successful completion of the first six months of study, enrollees receive the Ministerial Ordination Diploma, which "gives one the legal right" to "practice spiritual healing," and the "Practitioners Ordination Diploma," which "protects one's right legally to practice Spiritual Healing"; and (4) to those who successfully complete the "Doctoral Degree Program" and have "Ministerial standing" with the International Metaphysical Ministry, the "university" gives one of three "Ph.D." degrees: Doctor of Metaphysics, Doctor of Metaphysical Counseling, and Doctor of New Thought Ministry.

The Bottom Line

Few providers of alternative health education deserve the personal consideration of health professionals who desire *additional* credentials; i.e., few deserve candidacy as sources of credentials for credentialed people. Even fewer deserve the personal consideration of *would-be* health professionals.

Credentialing by correspondence may be a viable, even promising, movement. Alas, it is a movement dominated by fast-buck artists, charlatans, and propagators of mysticism, pseudoscience, and supernaturalism. □

A Battle-Cry for Reason and Rationality

JAMES RANDI

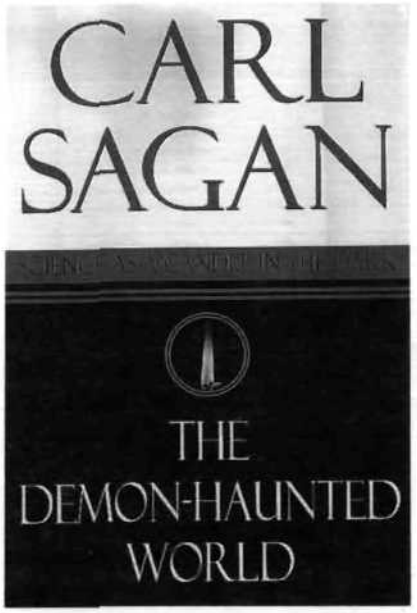
The Demon-Haunted World: Science as a Candle in the Dark. By Carl Sagan. Random House, New York, 1996. ISBN 0-394-53512-X. 457 pp. Hardcover, $25.95.

None of the incisiveness of *Broca's Brain* or the sweep of *Dragons of Eden* has been lost in Carl Sagan's new book, *The Demon-Haunted World: Science as a Candle in the Dark.* This one, however, focuses strongly and accurately on the pseudoscience, quackery, and general nonsense that readers of this journal have agonized over and that the skeptical movement as such was founded to oppose. We have here the battle-cry of our equivalent of an avenging angel.

Not that Sagan has ever failed to battle absurdity whenever he came upon it. In previous books, he has delivered jabs at astrology, parapsychology, various obviously nutty notions in cosmology, and prayer. In this present book, he rears back and produces roundhouse blows of far greater impact. Having seen an earlier manuscript of this book, I perceive here in the published version a stronger and less restrained Carl Sagan.

The opening chapter [which was excerpted in part in the March/April 1996 SKEPTICAL INQUIRER] is well worth the price of admission all by itself. After explaining what science is all about, Sagan gets to a definitive point at which he shows how it differs from religion and superstition. This is a section that every skeptic will find quite valuable when arguing the case for science and against antiscience. It's a clearly reasoned examination of points that we often find difficult to express.

He then launches into a delicious and riveting explanation, as an example of science at its best, of how Einstein's revolution of physics was not a denial of previous work, but an exciting expansion of known views of the universe. In effect, he shows us that Newton was not wrong but merely limited in scope by the tools available to him. The wonderful ability of science to correct itself upon the presentation of better data is clearly demonstrated here.



One of Sagan's admonitions particularly struck me as worthy of being communicated to every science classroom when science is first introduced to students:

> Finding the occasional straw of truth awash in a great ocean of confusion and bamboozle requires vigilance, dedication, and courage. But if we don't practice these tough habits of thought, we cannot hope to solve the truly serious problems that face us—we risk becoming a nation of suckers, up for grabs by the next charlatan who saunters along.

Very properly, Sagan also points out the perils of relieving naive persons of their delusions about the paranormal. His understanding of people fitting the description of the "Believer Type" is awesome, and he knows from experience that they are not easily led to reason. Their lack of knowledge about the real world, and of how it actually works, lies behind their delusions. Sagan suggests that "they know everything about Atlantis, but not a thing about DNA."

An episode that he relates particularly well involves "Carlos," a channeler who invaded Australia briefly and proved that the media can be willingly seduced so long as they are convinced that surrender to bunk will increase ratings, circulation, and general satisfaction of the consumer who adores being hornswoggled and will pay for that privilege. Jose Luis Alvarez, the young American "performance sculptor," took on the media Down Under in a whirlwind campaign that culminated in a one-night appearance at the Sydney Opera House, with teary-eyed devotees clutching crystals and being told ridiculous things by Carlos, such as "Gravity is simple; it is more natural for things to

fall down than to fall up!" When Alvarez's hoax was revealed to be a work of performance art commissioned by TV's Channel Nine, the victims in the media were unrepentant. Why are we not surprised?

In connection with the Alvarez creation, and the failure of the media to provide any responsible investigation of the actual facts behind it, it is proper to note that Harry Edwards, a prominent and outspoken figure in the Australian skeptical community, was invited on one TV show to dispute the reality of the claims of Carlos, and promptly revealed—correctly—the *modus operandi* for Carlos's pulse-stopping trick, a demonstration that had wowed the press and was seen several times in TV interviews of the young "guru." Edwards's direct explanation was ignored by everyone, and the subsequent confirmation of his evaluation—when the hoax was finally revealed—must have been a great satisfaction to him and to the skeptical movement.

Sagan sums up such matters as the Roswell "crashed flying saucer" episode in two succinct paragraphs, giving it as much attention as it really deserves. Later he discusses "UFO abductees" who declare that they have been kidnapped and whisked off to Venus or another unlikely spot to have their reproductive systems examined and tinkered with. These colorful and popular characters often report very similar physical appearances for the aliens who grabbed them, and Sagan points out that

> The believers take the common elements in their stories as tokens of verisimilitude, rather than evidence that they [the abductees] have contrived their stories out of a shared culture and biology.

Taking what could be considered easy shots at the fare that has been and is being offered us on television, the author points out that the "In Search Of . . ." series began each episode with a gentle disclaimer stating that the writers were simply not presenting a properly balanced view of the subjects discussed. He says,

> The idea that there might be alternative explanations to be decided by the weight of evidence never surfaces.

He lumps the "Sightings" and "Unsolved Mysteries" series in with this uncritical blight infesting the world of TV.

"The X-Files," he tells us, very seldom meets its thinly avowed dedication to the skeptical point of view, and "Star Trek," in its several incarnations, ignores completely the basics of biology, allowing interspecies mating that is equivalent to accepting the crossing of a man and an artichoke. The film *Star Wars* used "parsec" as a unit of speed instead of distance.

Dropped in among all these comments is one that struck me as being a very pertinent inquiry: "When is the last time you heard an intelligent comment on science by a President of the United States?" Sagan here missed the recent statement by Presidential candidate and intellectual giant Pat Buchanan, who asserted that no scientist could ever convince him he was descended from a monkey. I'll leave that stultifying error and the question it obviously invokes. . . .

Chapter 13 of *The Demon-Haunted World,* "Obsessed with Reality," contains "a representative, not a comprehensive, list" of "typical offerings of pseudoscience." There are forty-eight items listed, among which are favorites like dowsing, homeopathy, Edgar Cayce, perpetual motion machines, Scientology, and phone calls from the dead. Reading his account of these subjects, one cannot resist the suspicion that Dr. Sagan grows weary of laboring in a vineyard that yields such inferior and moldy fruits.

Sagan's treatment of even the most bizarre claims is typically sensible and gentle (unlike some other skeptical critics, one of whom he refers to as "intolerant and condescending") and he manages to keep his dismay at the foibles of popular culture from coloring the text.

The clear, nontechnical language used by Carl Sagan in *The Demon-Haunted World* will provide any lay persons with the means to properly examine their personal beliefs. Whether Sagan can induce the horse to drink after being led to water is yet to be seen.

There was a pseudo-factual book titled *The Cloning of a Man,* which declared on its cover, "A True Story!" and for a few weeks made a minor brouhaha in publishing circles, then deservedly vanished. Were the claims of that book true, we might wish to insist that all efforts be made to clone Dr. Carl Sagan. We need him, and a dozen of his clones, to head up the skeptical forces that are essentially the only protection available to the public against uncritical thinking and media exploitation of ignorance. Buy several copies of *The Demon-Haunted World* and donate them to school libraries wherever you can. That would be a worthwhile investment, I assure you.

The back jacket of the book bears a quotation that could be inscribed above the doorway of every school in the world:

> I worry that, especially as the Millennium edges nearer, pseudoscience and superstition will seem year by year more tempting, the siren song of unreason more sonorous and attractive. Where have we heard it before? Whenever our ethnic or national prejudices are aroused, in times of scarcity, during challenges to national self-esteem or nerve, when we agonize about our diminished cosmic place and purpose, or when fanaticism is bubbling up around us—then, habits of thought familiar from ages past reach for the controls.
>
> The candle flame gutters. Its little pool of light trembles. Darkness gathers. The demons begin to stir.

Are we listening? □

James Randi, magician and indefatigable investigator of paranormal claims, is author of such works as Flim-Flam!, The Faith Healers, The Mask of Nostradamus, *and, most recently,* An Encyclopedia of Claims, Frauds, and Hoaxes of the Occult and Supernatural *(St. Martin's Press). He recently announced the creation of the James Randi Educational Foundation to conduct or finance original research into paranormal, occult, and supernatural claims.*

A Wayward Way to Buddhist Spirituality

JOSEPH P. SZIMHART

Surfing the Himalayas: A Spiritual Adventure. By Frederick Lenz. St. Martin's Press, New York, 1995. ISBN 0-446-52034-9. 236 pp. Hardcover, $14.95.

Many years ago I wrote to a Tibetan scholar, Nawang Tsering, for information about a mysterious manuscript that was allegedly kept at the Hemis Gompa Buddhist Monastery in Ladakh—a region north of the India (now part of Kashmir). The manuscript told about the wanderings and teachings of a man named "St. Issa," who spent his youth in India and Tibet. At age 30 this man returned to his native Israel to preach for several years only to be crucified. He was supposedly Jesus, who began the Christian religion. Tsering graciously researched the story for me with his friend who was both a monk and a historian at the monastery. His reply confirmed my research and that of many others who have invalidated the legend created by adventurer Nicholas Notovitch, who published his *Life of St. Issa* in the late nineteenth century. Notovitch claimed that he got his information from a manuscript at the monastery.

Tsering told me that no such manuscript ever existed at this or any other Buddhist monastery; that it was all "thought construction." He also wrote that just as we in the West have many legends about Jesus, so too, Buddhists have put up with quite a bit of nonsense in the East about the Buddha.

Frederick Lenz—"Rama" to his cult following—has created a version of Buddhism in *Surfing the Himalayas* that is entirely self-serving, while revising Tibetan religion from an idiosyncratic, New Age perspective. In the book, he introduces us to a fictitious, "enlightened" monk with miraculous powers, Master Fwap. The monk is the sole living teacher from the ancient (fictitious) Rae Chorze-Fwaz Order. Fwap's lineage stems from the legendary Atlantis that sent great teachers to ancient Egypt and other places before it sank from its karmic depravity. Fwap tells us that the ancient wisdom behind true enlightenment is now contained in his mysterious Buddhist enclave outside of Katmandu, Nepal.

Although *Surfing the Himalayas* is published as a fictional account, Lenz nevertheless claims that the book contains his "real experiences" when he was in Nepal "some time ago." The story begins with Lenz, the author, as the narrator—a device used by James Redfield in his comparable best-seller, *The Celestine Prophecy*—telling us about his love for the snow and sledding as a young boy. It quickly moves to a period when Lenz was a man of college age—which places the narrative around 1970. He flies to Nepal to "surf" the Himalayas since he has already "successfully snowboarded most of the higher mountains in the United States and Canada." He checks into the Katmandu Youth Hostel where he falls asleep and has a weird dream in which he meets a magical Buddhist monk on a mountain of snow. The monk appears in the air next to Lenz, who has inadvertently careened off a cliff. The monk teaches him to levitate and saves him.

Later, after awakening, Lenz hires a yak-drawn cart driven by a farmer who takes him from Katmandu to a snow-covered Himalayan mountain "in several hours." After a few hours of climbing, Lenz states that he was "on top of a mountain twice as high as any I had snowboarded before." During his first run he crashes into an old, bald-headed monk who seems to appear out of nowhere. Thus begins his relationship with Fwap, who convinces the boy to become his student because of Lenz's achievements in past lives as a meditator and occultist. We discover that Lenz has been chosen to carry on the important work of the Rae Chorze-Fwaz Tantra Mystery School and that Fwap is its only living "enlightened" master on the planet.

From Chapter Two onward the text abounds with the wisdom of Fwap, who guides his beguiled young student into the teachings of his order. The master uses the snowboard as a tool during several sessions. In one situation Fwap himself steps on the board with the "wrong shoes" and swiftly glides down a steep slope only to levitate, board and all, back to the top. Fwap directs Lenz to accomplish this by becoming "one with the board." Such magical guru tricks amaze Lenz who then wants to learn more. But the unflappable Fwap brushes magical power aside, telling his student that it is merely a by-product of enlightenment—the true goal.

Fwap's preachings are directed by simple questions from his student. On one occasion Lenz asks how to tell if a Buddhist master is enlightened. "The first condition was that the master's aura would turn a beautiful, bright golden color when he meditated." The second characteristic was that the master "would always have a totally outrageous sense of humor, because life, when viewed through the eyes of enlightenment, was incredibly funny!"

Some of Fwap's teachings sound suspiciously like those of the don Juan character created by writer Carlos Castaneda. Fwap discourses about the *second attention, luminous beings, the tonal, places of power,* and *seeing* in terms familiar to anyone who has read Castaneda's own magical autobiographi-

cal adventures. Perhaps don Juan was merely teaching the Rae Chorze-Fwaz Tantra philosophy.

But there is more here than a mere rip-off of Castaneda. In this book Lenz has condensed significant elements of his own teachings since the early 1980s. His devoted students believe that he is an enlightened being (like Master Fwap or don Juan) who radiates golden light and has an outrageous sense of humor. Well, at least some of them do. The rest seem to believe that they are not spiritually advanced enough to *see* his luminous aura or appreciate his humor, but they remain loyal with hopes that someday they might.

Surfing the Himalayas was self-published in 1994 by Lenz in a small edition mostly for his students (InterGlobal Seminars, Inc.). The book gained the attention of Warner Books, which has had huge success with another initially self-published spiritual adventure, *The Celestine Prophecy.* Warner bought the rights to *Surfing* for a cool quarter million dollars and planned to publish it under its label in the fall of 1995. After the Warner-Lenz deal appeared in *Publisher's Weekly* (May 22, 1995), Warner received information alleging Lenz was a controversial cult leader with a sordid reputation for sexually manipulating female followers. Warner dropped the contract, but still lost $80,000 to Lenz in the deal. St. Martin's Press, an earlier bidder, picked up the contract for an undisclosed amount, but according to the *New York Times* (July 13, 1995), St. Martin's was unaware of any controversy surrounding Lenz.

There has been a spate of books geared for the spirituality seeker carried in recent decades by publishing houses hoping to tap the expanding New Age/metaphysical market. Lenz's book mimics many others that use literary devices such as a mysterious spiritual master from a mysterious and ancient spiritual order. The remote Himalayan cultures and exotic Tibetan teachers have been foils for many authors. Often these authors gain a cult following gullible enough to believe that the writer actually experienced what he wrote about. For instance, there have been hundreds of thousands of people who believed that the books by T. Lobsang Rampa—the first was the *Third Eye* in 1956—were true stories by a Tibetan monk who gained psychic powers. In reality, T. Lobsang Rampa never existed. The books were written by Cyril Henry Hoskin, the son of a British plumber. He had never visited the Orient.

Lenz's spiritual adventure comes closer in type to another man's, who also posed as a student of a mysterious Tibetan master. Paul Twitchell published *The Tiger's Fang* in 1967 about his magical adventures with Eckankar Master Rebazar Tarzs. Tarzs, according to the book, has been around nigh 500 years and is a member of the ancient Vairagi Order of Soul Travelers. In reality, Twitchell based his Tarzs character partially on Kirpal Singh, a guru from a fringe Sikh organization, the Radhasoami Satsang, with whom Twitchell had studied. Twitchell was known to have plagiarized heavily in writing his "autobiography." The new religion of Eckankar is based on Twitchell's revelations, which curiously blend Theosophy with the Radhasoami tradition of India and Scientology. Twitchell had been a member of the latter group as well.

Lenz had dedicated his first book, *Lifetimes: True Accounts of Reincarnation* (1980) to his guru, Sri Chinmoy, now based outside of Brooklyn. Lenz was called "Atmanada" when he broke with Chinmoy in the early 1980s to start his own cult. His first members had been Chinmoy devotees. Chinmoy is another godman who has made claims to superhuman powers. Chinmoy had been a member of a modern ashram in India founded by Sri Aurobindo before setting up his own group in the late 1960s. Lenz denounced Chinmoy and proclaimed himself to be Rama around 1983. Although Lenz has been called a charlatan in the media many times, he manages to hold onto several hundred or more dedicated devotees who nearly all pursue computer programming jobs. Many "offer" him as much as several thousands of dollars a month for his "spiritual" support. Fwap, in some ways, is merely a revision of Sri Chinmoy, who claims to be the most evolved human being on the planet.

One former Lenz devotee and close friend who knew him in the early days from 1977 is Mark E. Laxer, who published *Take Me for a Ride: Coming of Age in a Destructive Cult* in 1993. He left Lenz in 1985. Laxer notes that Lenz became progressively more delusional and coy, but manipulative, over the years. Lenz said he believed then that LSD helped a teacher to reorganize a student's aura of luminous fibers and he encouraged its use with special students. Fwap does not talk about LSD, but he does teach that a person's soul or aura needs to be "repatterned" with a master's help in order to speed up enlightenment. I believe that Lenz has chosen this period of his life to revive himself with *Surfing the Himalayas.*

It is highly unlikely that Lenz was snowboarding in Nepal at the time of his story, for several reasons. Snowboards were not developed until the mid 1970s or later. Lenz has never demonstrated his snowboarding abilities to eyewitnesses, to my and former members' knowledge. Even if the snowboarding is merely a fictional device employed by Lenz, the author's knowledge of actual places like Katmandu and the Himalayas is insular. I visited Darjeeling, Katmandu, and other Himalayan communities in February 1981. Himalayan yaks flourish around 14,000 feet or higher and get sickly and die at lower altitudes. I remember seeing a lone yak in the zoo in Darjeeling. It was in terrible shape at 7,500 feet.

Joe Szimhart has been a specialist in controversial new religions, therapies, and cults for more than a decade. He works as a consultant to help groups and individuals to understand or reevaluate participation in questionable behaviors and beliefs.

Katmandu is at 4,600 feet. It is unlikely that Lenz hired a yak-driven cart there. Less likely is a slow-moving animal reaching anywhere near snow-clad slopes from Katmandu in several hours as Lenz describes, even in winter.

Lenz states that he climbed "twice as high" on his first Himalayan peak as he ever had in North America. I have climbed many average American peaks up to 13,000 feet. During the snow season, hiking was extremely difficult if not impossible without snowshoes. Even if Lenz had snowboarded at a mere 12,000 feet in North America, this would have placed him at 24,000 feet in Nepal, no easy feat for a single trekker in one day who may have had to climb around 10,000 feet after a yak cart dropped him off. In any case, Lenz neglects to mention that trekking in Nepal's mountains was not and is not allowed without a permit and a guide with the route approved by the Central Immigration Office.

The yak, the snow-covered peaks, and Fwap all become fantastic literary devices upon analysis of *Surfing the Himalayas* and not part of a possible setting that supports good fiction. Fwap's Rae Chorze-Fwaz Order is as fictional as Tarzs's Vairaigi Order and a host of other pseudolineages proclaimed by modern cults. Fwap's discourses on Tantric Buddhism speak more of Western New Age occultism and folk Tantra than essential Buddhism. Fwap argues that the Christian-influenced West is linear and hierarchical in its thinking, whereas the Buddhist East is circular and more efficient. He teaches that the earth is polluted psychically by too many unenlightened people; and that he (Fwap) needs to refresh himself at times at his monastery.

"Every living being is psychic. . . . Did you know that the vast majority of thoughts you think and emotions you feel aren't even your own?" Master Fwap asked with a wry smile on his face (p. 55).

Fwap later carries this equivocal concept to extremes: "Whether you are aware of it or not, your board has an inherent knowledge of its own capabilities because it is made up of intelligent energy, just as you are" (p. 87).

He also stresses that one needs a living, enlightened teacher if one is to seek enlightenment. Fwap's master was Fwaz Shastra Dup, a monk who died around 1950. Lenz does not tell us if Fwap is available to other seekers, but he does point to himself today as heir to the Tantric throne of enlightenment via the Rae Chorze-Fwaz Order.

Lenz's future plans are indicated in Chapter Four, in which he has a curious dream about himself in the future. His future self convinces Lenz to meet with Fwap rather than go snowboarding on an auspicious day.

"You owe him your life, you know. You ran him down with your snowboard. . . . He could have easily burned you into a very small pile of ashes with his occult power, but because he is a compassionate Buddhist master he let you off the hook."

He reveals this in his vision to himself as a student in a large Buddhist temple with stained glass windows. Lenz meets his future self facing a large white marble altar adorned with six giant red candles. Lenz tells the novice the future: "This is my—our—temple. Not bad, is it? We designed it ourselves."

Earlier in this review I mentioned Nawang Tsering. In 1979 he published *Buddhism in Ladakh* in India, a biography of an eighteenth-century Ladakhi saint and scholar, Ngag-dbang Tse-ring [*sic*]. The saint was a historically authentic follower of Buddhist Tantra and, according to Tsering, a pivotal scholar and reformer much loved by his disciples and peers. That is far more than we can say about Fwap—a magical character of the imagination. After initial promotion, including a full-page ad in the *New York Times* in November 1995, *Surfing* is doing very well as a New Age title. Frederick Lenz may have a best-seller by present indications, but that is not surprising.

There is a market for gullible seekers who fail to distinguish either the message or the messenger of Buddhist wisdom. Another case in point, *The Tibetan Book of Living and Dying* by Sogyal Rinpoche has done very well since its release in 1993. If Sogyal Rinpoche is an authentic Buddhist by training, if not in practice, that is more than we can say about Lenz. If you want Buddhist wisdom, first get an education in authentic Buddhist philosophy. Reading books by Sogyal Rinpoche or Lenz is not going to get you closer to Buddhist spirituality. □

Witch Hunts Past and Present

PETER HUSTON

Witch-Children: From Salem Witch-Hunts to Modern Courtrooms. By Hans Sebald. Prometheus Books, Amherst, N.Y., 1995. ISBN 0-87975-965-8. 258 pp. Hardcover, $24.95.

Throughout the history of human justice, a key problem has been to determine how reliable children's testimony is. A few centuries ago, the perceived reliability of children's testimony was a key factor in many witchcraft trials. Often innocents were executed following the damning testimony of a child. Today, particularly in cases of alleged sexual abuse of children that sometimes includes satanic-ritual abuse, we once again often see the guilt or innocence of the accused decided on the same sort of evidence.

In this groundbreaking work, *Witch-Children: From Salem Witch-Hunts to Modern Courtrooms,* Hans Sebald examines children's testimony from both eras and draws parallels. Although the information is good and the parallels well drawn, in my opinion the book suffers

from overly long stretches in which it dwells too much on the dark history of European witchcraft trials. Although the witchcraft trials are important and interesting in their own right, the book jacket seems to promise a text that grapples more with the important modern social issue of children's courtroom testimony. Instead, the topic of children's present-day courtroom testimony is virtually ignored in much of the book.

In Part One, Sebald, professor emeritus of sociology at Arizona State University, discusses how children can easily suffer from "mythomania"—a tendency to imagine fanciful scenes and events and later come to believe them as fact. Among children, the author says, this is quite common and normal. Mythomania in a child becomes more readily active when the child's imagination is led by adults who expect the child to say certain things. The author describes the culture of the fifteenth- to the early eighteenth-century witch-hunters and inquisition and describes how fearful society was of the imaginary threat of witchcraft. He describes how such a society could lead a child not only into testifying against others but, surprisingly, even into testifying against himself or herself. Parallels are drawn with modern practices of using children's testimony to support accusations of sexual abuse of children that sometimes includes satanic-ritual abuse.

The focus on history is most apparent in Part Two. Here we are offered a detailed examination of the confession of a 9-year-old child known only as "the Witchboy." Responding to an accusation in 1629 in Bramberg, Germany—without torture, but under the threat—the Witchboy gave the inquisition an elaborate and highly detailed confession claiming that he had been involved in a variety of sorcerous and black magic activities. The motivations for this confession, as well as the social and historical context in which they are placed, are discussed in full.

Those interested in the witch trials should gain much from the well-done description in this fascinating book. Nevertheless, it is doubtful those interested in modern courtroom activities will benefit much from such an elaborate and detailed description in this documentation of the role of children in seventeenth-century German society.

In Part Three, parallels are drawn much more strongly between historical and modern behavior. At one point the author mentions multiple personality disorder, a possible result of abuse, without discussing that the diagnosis is highly controversial and many believe it to be nothing more than iatrogenic malingering by patients anxious to please a therapist. His references to false memory syndrome, although appropriate, are backed up by very few sources. Still, overall this section is well done and perhaps the best part of the book.

Lately, I have become involved in the issue of how innocent people can become falsely accused of sexual abuse of children. Child abuse and sexual abuse of children are terrible and must be prevented, but no good occurs by punishing those innocently accused. Furthermore, I am troubled by the way in which those charged are often treated as guilty until proven innocent, particularly when children, often highly coaxed and trained children, testify against them.

Would I recommend this work to those who share my concern? The answer is yes, I would recommend it highly, but I would encourage people to begin at Part Three, followed by Part One, and then, only if they're interested in the history of Germany or witchcraft trials, turn to the ninety pages that make up Part Two of the work. Those interested exclusively in the witchcraft trials may reverse this order. Having done so, I expect they will find this an informative and fascinating book. □

Peter Huston writes from Schenectady, N.Y.

NEW BOOKS

The Demon-Haunted World: Science as a Candle in the Dark. **Carl Sagan.** Random House, 201 East 50th Street, New York, NY 10022. 1996. ISBN 0-394-53512-X. 457 pp. $25.95, hardcover. This is the noted astronomer and Pulitzer Prize-winning author's long-awaited work on behalf of science, reason, skepticism, science education, and scientific literacy in a popular climate of superstition, pseudoscience, and irrationality. (Several excerpts were published in the March/April SKEPTICAL INQUIRER.) In his fresh and personal approach, Sagan explores all manner of bizarre topics and beliefs ranging from alien abductions, UFOs, and the face on Mars to hallucinations and repressed memories while presenting science as humanity's best hope for truly understanding the natural world. See James Randi's review in this issue.

The Encyclopedia of the Paranormal. **Gordon Stein, editor.** Prometheus Books, 59 John Glenn Dr., Amherst, NY 14228-2197. 1996. ISBN 1-57392-021-5. 859 pp. $149.95, hardcover. Foreword by Carl Sagan. An ambitious and long-needed reference work. Presents comprehensive, authoritative articles on nearly all substantial aspects of the "paranormal" from a generally balanced, scientific point of view. Most of the 56 contributors are skeptical scientists and scholars (including many Fellows of CSICOP and other authorities familiar to readers of the SKEPTICAL INQUIRER). Several well-known parapsychologists are also included. Among the 92 topics, presented alphabetically in articles ranging from a few thousand to more than 10,000 words each, are altered states of consciousness, ancient astronauts, astrology, cattle mutilations, coincidences, CSICOP, fortune-telling, ghosts, graphology, hypnosis, levitation, the media and the paranormal, miracles, New Age thinking, out-of-body experiences, palmistry, parapsychology, poltergeists, prophetic dreams, psychic detectives, psychic research, psychokinesis, reincarnation, scientific creationism, skepticism and

the paranormal, spiritualism, spontaneous human combustion, statistics and the paranormal, UFOs, Velikovsky, witchcraft, xenoglossy, and zombies. Each article includes a bibliography. With a few caveats, this is a worthy and highly recommended reference work that will be valuable to all scholars, libraries, and skeptical investigators.

Eccentrics. **Dr. David Weeks and Jamie James.** Random House (Villard Books Division) 201 East 50th Street, New York, NY 10022. 1995. ISBN 0-394056565-7. 277 pp. $23.00, hardcover. In a study of sanity and strangeness, a neuropsychologist and a journalist examine the topic of human eccentricity, and find that eccentrics are creative, curious, idealistic, opinionated, intelligent, and, in many cases, healthier than the average person. A chapter on scientists explores the fine line between genius and madness, also subject of an earlier chapter on the distinctions between eccentricity and mental illness.

The Great Dinosaur Extinction Controversy. **Charles Officer and Jake Page.** Addison-Wesley, New York, 1996. ISBN 0-201-48384-X. 224 pp. $25.00, hardcover. In 1980 Nobel laureate physicist Luis Alvarez and his geologist son Walter Alvarez propounded the theory that the great Cretaceous–Tertiary extinction event 65 million years ago was caused by the impact of an asteroid into Earth. Since then this view has gained wide scientific and popular prominence and considerable general acceptance. Here a Dartmouth geologist and a science writer challenge the asteroid-impact scenario. In a short, readable, provocative book, they amass scientific evidence and arguments against all substantial aspects of the Alvarez hypothesis, including the extraterrestrial origin of the iridium layers and the Chicxulub structure on the Yucatan as the impact site. They contend Chicxulub is not an impact structure at all, and present evidence that the extinction was a consequence of wholly earthly, natural events. They call for skepticism toward the entire subject and put the asteroid-impact claim into the same category as pathological science episodes such as polywater. In addition to the scientific arguments—all presented accessibly—particularly interesting are the chapters on science and politics, "silly season" side-scenarios (the Nemesis star and comet impacts with a periodicity of 26 million years), and media science. Whether one agrees with them or not—how asteroid-impact proponents respond will be interesting to see—the book should be read by all scientists involved in the controversy, science writers, and students of how scientific ideas are presented and become accepted.

The Unconscious Quantum: Metaphysics in Modern Physics and Cosmology. **Victor J. Stenger.** Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228. 1995. ISBN 1-57392-022-3. 322 pp. $32.95, hardcover. One of the first works that addresses the metaphysical claims of writers on the new physics from a relatively detailed critical perspective. Stenger, a professor of physics and astronomy (University of Hawaii) and author (*Physics and Psychics*), leads the reader through modern quantum mechanics and addresses claims of authors such as Deepak Chopra and Fritjof Capra—such as the assertion that human consciousness holds the key to reality. A chapter entitled "Cosmythology" critically examines the cosmic anthropic principle that attempts to put humans at the center of reality and the universe. Stenger says he hopes other physicists and scientists will join him in "providing the reading public with a more balanced view of the significance of developments in twentieth-century physics and cosmology."

Voices for Evolution. **Edited by Molleen Matsumura.** The National Center for Science Education, Inc. P.O. Box 9477, Berkeley, CA 94709. 1995. ISBN 0-939873-53-2. 176 pp. $10 + $2 shipping (volume discounts available), paper. Revised, expanded edition of an invaluable resource book presents statements from the world's leading scientific organizations (including the National Academy of Sciences and those representing biologists, geologists, astronomers, geophysicists, chemists, and psychologists), educational associations, and religious organizations asserting the primary legitimacy of evolution as a fundamental principle of science. An important addition to this edition is a summary of six significant court decisions from 1982–1994 regarding evolution/creation issues.

—Kendrick Frazier

ARTICLES OF NOTE

Amos, Bill. "Chance Remarks." *Nature,* February 8, 1996. Letter pointing out how a global type I error (a statistically significant result occurring strictly by chance) might operate between laboratories. Shows that there "is such a thing as a global type I error and that individually good statistical practice does not necessarily remove that risk."

"More Spirited Debate on Physics, Parapsychology and Paradigms." *Physics Today,* April 1996, pp. 15, 81. Two letters comment on an earlier article by Jonathan P. Dowling (July 1995) that expressed concern about *Physical Review A*'s publication of a paper by Henry P. Stapp dealing with parapsychological experiments. Dowling then responds.

Diamond, Jared M. "Daisy Gives an Evolutionary Answer." *Nature,* 380: 103–104, March 14, 1996. Noting that creationists often claim that evolution is only inferred, not observed directly, Diamond here reports on "a remarkable paper" (*Journal of Ecology,* 84: 53-72, 1996) in which the authors report the direct detection of both rapid evolutionary change and a phenomenon in populations of wild plants in which new colonies of a species may become instantly distinct from the parent population.

Kor, Peter. "Where are the Saucers?" *Kor's Kosmos* (1207 Cordova Rd., Mayfield Heights, Ohio 44124), 10: 1–19, March 1996. A call, in a lengthy dialogue, for stock-taking and critical thinking by flying saucer proponents. "Saucer research is at a crossroads," Kor says in his introduction. "After almost 50 years of investigation and speculation, the solution that researchers seek is nowhere in sight. Indeed, the discrepancy between what is believed about flying saucers and what can be proved continues to grow, forcing researchers to invent increasingly radical explanations to compensate. The time has come to pause and take stock . . . [to determine] why the quest that began with so much promise so long ago has not lived up to expectations."

Lemonick, Michael D. "Dumping on Darwin." *Time,* March 18, 1996, p. 81. Good, succinct report, sympathetic to the scientific viewpoint, about recent attacks by politicians and creationists on evolution. There is no controversy [about the fact of

evolution] among scientists, *Time* says. "The only dispute comes from a small, vociferous band of religiously motivated scholars who focus on evolution's admitted inconsistencies and ignore its powerful insights."

Mermin, N. David. "What's Wrong with this Sustaining Myth?" *Physics Today,* March 1996, pp. 11, 13. A thoughtful physicist's essay in reply to arguments and misconceptions about science used by sociologists Harry Collins and Trevor Pinch in their award-winning book *The Golem: What Everyone Should Know About Science.* (Cambridge University Press, 1993) Do scientists build consensus out of disagreement by a social process? How could it be otherwise? Mermin asks. But, "the notion that this is the whole story—that all we are doing is exercising our exceptional skills at coming to agreement—is a sustaining myth for sociologists. . . . I believe their book furnishes an instructive demonstration of what can go wrong if you focus too strongly on the social perspective." Sociologists like the authors leave out essential parts of the process, he says—an understanding of the "multitude of interlocking mutually reinforcing clues" that lead to acceptance of a scientific theory. "They never acknowledge that an enormous multiplicity of strands of evidence, many of them weak and ambiguous, can make a coherent logical bond whose strength is enormous. . . . By focusing on individual threads they have produced a picture of 'what actually happens in science' that overlooks the crucial role played by the intricate structure of the whole interconnected tapestry."

Mermin, N. David. "The Golemization of Relativity." *Physics Today,* April 1996, pp. 11, 13. Following up on his earlier essay, here Mermin examines how Collins and Pinch in *Golem* treat the theory of relativity. Collins and Pinch make much of the fact that the famous Michelson–Morley experiment was less decisive and more ambiguous than is usually presented (a point with which Mermin agrees) and imply that relativity was therefore accepted on less-than-solid grounds. But he says the authors ignore a variety of reasons for believing in special relativity in 1925 "having nothing to do with Michelson–Morley." He says Collins and Pinch don't even hint that they are following "a single tiny strand in an enormous tapestry of fact and analysis." It is only by ignoring all this other evidence that they can conclude that the acceptance of relativity was primarily a cultural phenomenon. "Collins and Pinch confuse a legend about relativity with relativity itself, and they use the weakness of that legend to undermine the intellectual coherence of the process by which the theory was established, paving the way for them to transform it from a truth about the natural world into a cultural artifact."

Newman, Leonard S., and Roy F. Baumeister. "Toward an Explanation of the UFO Abduction Phenomenon: Hypnotic Elaboration, Extraterrestrial Sadomasochism, and Spurious Memories." *Psychological Inquiry,* 7(3): 101–126, 1996. This target article leads off almost an entire issue devoted to this paper and discussion of it. Newman (University of Illinois, Chicago) and Baumeister (Case Western Reserve University) offer a cognitive-motivational explanation for how spurious memories of UFO abductions can be created and maintained. The motivational roots lie in people's desire to escape from the ordinary. The cognitive bases involve the integration and elaboration of hallucinations, general knowledge, and contextual cues into full-blown accounts, usually with the aid of hypnosis. Due to the pitfalls of hypnosis, people develop a high degree of confidence in the verity of spurious UFO abduction memories. Following this paper, the journal presents twelve commentaries (by people ranging from Martin Orne to John Mack), and Newman and Baumeister then respond with "Not Just Another False Memory: Further Thoughts on the UFO Abduction Phenomenon" (pp. 185–187).

Thalbourne, Michael A. "Science Versus Showmanship: A History of the Randi Hoax." *Journal of the American Society for Psychical Research,* 89: 343–366, October 1995. On January 28, 1983, the professional conjuror and investigator James Randi announced his Project Alpha—that he had masterminded a hoax against the McDonnell Laboratory for Psychical Research at Washington University, St. Louis. This is the published version of an earlier manuscript that circulated privately describing the hoax and raising what parapsychologists have contended are "controversial methodological and other scientific issues" to which the episode has drawn attention.

—Kendrick Frazier

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DON'T MISS ANOTHER ISSUE

A View from Russia: Popularization of Science as a Tool against Antiscience

BORIS SHMAKIN

In Russia, as well as in many other countries of the world, many parapsychologists, astrologers, so-called nontraditional medical doctors (mainly charlatans), specialists on UFOs, etc., are involved in pseudoscientific "investigations." Very often they use radio, television, and newspapers to publish articles on various topics of pseudoscience. Why is such activity still not unmasked?

There are at least three reasons: (1) The leaders of mass media organizations are not educated enough to recognize and expose pseudoscientific "theories." They don't ask advice of real scientists, probably in order to conceal their naivete; and scientists themselves are, as a rule, not sufficiently active in the struggle against antiscience. (2) Real scientists understand the limitations of general knowledge. They sincerely acknowledge that many puzzles of nature are not yet understood. Parascientists, on the contrary, are confident in their "achievements"; they pretend to be more certain. (3) In the 1930s and 1940s some attempts were made in the former Soviet Union to end investigations in such important fields as genetics and cybernetics. After such oppression was disclosed and lifted, biologists and physicists—along with pseudobiologists and pseudophysicists—felt freedom. The latter demanded respect for their "new ideas" and they portrayed themselves as fighters for truth.

When real scientists are active, they can expose pseudoscience. A well-known scandal happened in 1991, when physicists of the USSR Academy of Sciences demanded that government cease to support charlatans working on "microlepton fields" (distant biological influence of army and civil inhabitants with "torsion radiation"). About $500 million had been spent on such "investigations." Fortunately, the Supreme Soviet Committee stopped this waste of money. The Academic Department of General Physics and Astronomy at a special session on July 9, 1991, characterized this case as "organized activity of pseudoscience with specific features of large-scale bluff."

In the 1990s the government of the Ukraine allocated much money to a man named Bovbalan for realization of his ideas to move clouds and cyclones, to cause rains in drought areas, and so on. This episode became known to the public only a year ago.

Even in the circles close to the president of the Russian Federation there are "believers" in miracles. The newspaper *Moscow News* (weekly, Nos. 29 and 30, 1995) published a story about General George Rogozin, who is the deputy chief of the Presidential Security Service. His hobby is studying occultism, telepathy, astrology, etc. As the newspaper stated, Rogozin prepares the astrological "forecasts" for the leaders of the country.

We should not be astonished when in a Russian television program astrology was characterized as an "applied science"; and when we regularly watch on television such "specialists" on astrology as former doctor of sciences in chemistry V. Velichko or former physicist Tamara Globa.

I am a member of the International Academy of Information, which has headquarters in Moscow. There are many divisions organized by scientific specialization or by regions of activity (as our Irkutsk Division, for instance). The leadership and divisions of the academy have taken much positive action. But recently I was shocked to learn that one more division was named: the "Division of UFOlogy and Bioenergoinformatics"! Isn't that a shame for the scientific community? We are trying to overrule this disgraceful decision, but it is difficult to find the source of such a mistake.

One more shameful situation happened in the Russian Parliament. Members invited a "soothsayer"—Raisa Soumerina—to talk to them. She tried to determine who in the government is "constantly erring," who is "stamping his feet," etc. And the members of the Parliament were listening to this delirium! Professor of physics E. P. Kruglyakov, the corresponding member of the Russian Academy of Sciences, called this case a symbol of "degradation of authorities" (*Nauka v Sibiri,* weekly, Nos. 47 and 48, 1995).

There are a few ways to struggle against pseudoscience. One is to check publications and television programs prepared by astrologers, parapsychologists, etc. in order to find their mistakes and to disclose false "facts" and bogus "theories." This is being done by the NLO (UFO) Commission of the Russian Academy of Sciences and by the Committee for the Scientific Investigation of Claims of the Paranormal in the United States and elsewhere. But we are never sure that the results will be as widely available to the public, radio listeners, and television watchers as are false claims. In every case scientists can be labeled "oppressive" or "fighters against new ideas."

Another way is the popularization of real science, its laws, and its achievements. Everywhere we can use the possibilities to teach: in schools, universities, in television and radio programs. But maybe the best way of popularization is to publish books and articles in popular journals.

Such publications should not only be correct and understandable; they must be very interesting, written by scientific authors skillful in popularization.

In Russia we had examples of good, popular books on mathematics, physics, biology, and geology (including mineralogy and geochemistry). Repeatedly reprinted, these books attracted the attention of adults and teenagers for decades.

Boris Shmakin teaches in universities and works in geochemistry and mineralogy of endogenous processes in the Vinogradov Institute of Geochemistry, Siberian Branch of the Academy of Sciences, P.O. Box 4019, Irkutsk, 664033, Russia.

One of the most popular books amongst teenagers—my contemporaries—in the 1940s was the collection of romantic short stories by the well-known Russian mineralogist and geochemist A. E. Fersman, named *Reminiscences about Stone.* There are twenty-five stories, from three to nine pages each, connected with the brightest memories of the author's life.

"Saami's Blood" described the legend about the origin of the rare mineral eudialyte, red in color, in the Lovozero Mountains of the Kola Peninsula. "Testa Nera" (from the Italian for "black head") was a folk story telling why crystals of polychromatic tourmaline on Elba Island have black tops. "Blue Stone of Pamirs" was about the deposits of lapis lazuli in one of the mountain creeks with an appropriate name, Lajvar-Dara (Lazurite Creek).

"Proceeding to Sulfur" documented the story of the discovery of rich deposits in the center of the Kara-Kum Desert.

"The Kiss" was about the unexpected gratitude of a Mongolian guide who had to be threatened to show the way.

In the final chapter, the author calls upon young people to explore vast territories of Siberia, to discover ores and waters under their feet, and to invent new methods of metal extraction. He cited the words of the great Russian scientist of the eighteenth century, Michael Lomonosov: "Metals and minerals will not come to the yards themselves, they demand eyes and hands to be found."

Hundreds and thousands of youngsters became students in geology and geography departments of universities after reading this book and many other books written by Fersman and his colleagues, for example, geologists V. A. Obruchev and I. A. Efremov. I will cite just one sentence from Obruchev's popular book *Foundations of Geology:* "What does a stream whisper running along a ravine?"

These authors wrote their books (sometimes science fiction, such as *Plutonia* by Obruchev and *Andromeda Nebula* by Efremov) to show not only interesting facts and fantastic landscapes, but also principles of nature and specific features of life in expeditions. They tried to attract readers' attention to many puzzles of science, and to the excitement and happiness of divining them.

To my regret I cannot think of any members of the Russian Academy of Sciences of recent years who have written books for a wide circle of readers. It means that scientists do not consider the popularization of science to be one of their important functions.

One of the results is that, in many popular Russian journals such as *Nauka i Zhizn* (*Science and Life*), there are some poor scientific stories and even pages of parascientific attempts "to explain" something not understandable. In the bookstores, really scientific books are sinking in the seas of books with pretentious titles, such as *Everything about Life, Secrets of Health, Stars Recommend,* etc.

Let us stop being passive in situations when we have to act! Let us demand that mass media companies consult with real scientists when they publish or show something connected with science and nature. Let us write popular books and articles in order to demonstrate real scientific achievements and to make the truth stronger and more evident. □

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For more information, contact Barry Karr, Executive Director of CSICOP. All inquiries will be held in the strictest confidence.

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Faith in Science

RALPH ESTLING

We are hearing these days, more and more, the claim that science is no less an act of faith than is religion, and that far too many of us are using science today much as the church was used in the Middle Ages, as a repository, albeit a latter-day one, of all truth, hope, and knowledge. Science, or rather scientism, is the new god.

It's a message we're going to hear a lot more of. The idea, not new, that science is little more than modern man's church has received fresh impetus from the writings of a number of people calling themselves "philosophers of science," and it shows no sign of abating. Nor should it. It is an important and necessary cautionary tale, dangerous as it doubtless is when employed by those who fear science because they fear reason itself.

The argument of those who fear science seems to be two-pronged: 1) scientists too often make rash assertions of possessing truths, and 2) scientists too often dispute matters hotly with each other.

You will note the weakness in the assault, for it attacks itself massively on both flanks. One, that scientists pretend Godlike status and, two, that they're not Godlike enough. Scientists claim to know, and they debate too much over each other's claims to know, and then, to cap it all, they change their minds! They are indeed a shifty bunch.

I think we may rightly express our irritation with one or the other facet of the scientist's nature, that they are either too sure of themselves or not sure enough, but I can't help feeling that it's rather unfair to fault them on both counts simultaneously. Either they are arrogant and pig-headed, or wishy-washy wimps. But they can't be both at the same time.

Perhaps those who think that science is just religion with Bunsen burners in place of candles, our own day's edition of eternal unreasoning and unreasonable faith, and new formaldehyde in old bottles, can suggest something better in its place? Perhaps they can do something even more useful, and that is to study what science really claims to be: the best way of reasoning we have at the moment, to be abandoned as soon as anything better turns up. Anyone who sees our current state of scientific knowledge as the final step, apotheosis of all our dreams, is behaving idiotically on two counts: one, the more obvious, is that the present state of the game is subject to rapid, unexpected alterations at all times and in most directions; and two, less transparently the case, there is no God-given fiat that decrees that, whatever the state of play today, the future is bound to be one in which what we now call scientific method will still prevail forever and ever in all its hypothetico-deductive glory. At the moment we can't think of anything better to put in its place—I can think of lots of things that are worse—but this hardly constitutes evidence of its eternal primacy in the minds of human beings. To be honest, I can't imagine what might take scientific reasoning's place and be superior to it, but then my imagination is no big deal.

The necessity of being on guard to not allow science and its findings and methods to become our new faith and scientists our new high priests is one almost all true scientists would fervently endorse. In fact, they would plead with us to do so. For those whose faith in science is founded on a high respect for reason, and not a high respect for one's own particular reasons, the need for drastic and continual assessment is vital. Science cannot become a religion if it remains scientific. Science can never be certain. It must doubt everything: itself most of all. Religions, transcendent or earthbound, can't do that.

Why the need for these blindingly self-evident truisms, these platitudes of conspicuous presumption? Because science *is* becoming something like a faith to too many people: a crutch for some, and a good, whacking club for others to use on the heads of adversaries.

This misuse is nothing new. It was science's malignant afterbirth, accompanying it as it was born 400 years ago. And it haunts science today, dogging its footsteps like a malevolent shadow. Bacon, Galileo, and Descartes used science less as

a light to dispel the darkness of fear, ignorance, and superstition, and more as a battering ram to knock down the walls of the establishment of their day: a battleship, a howitzer, a cruise missile, sent into the world before its time, half-formed, like something designed by da Vinci, horrible, and lumbering, and clearly primitive, but effective enough to blast away the ancient citadels of church and state. It was never what it pretended to be: a disinterested search for truth. It could hardly be expected to have been. Pope Urban and Louis XIV were not inclined to look indulgently on disinterested searches for truth. Giordano Bruno knew that, and so did the church that burned him at the stake. Science's search for truth was always an interested one, a personal one. It was conducted by men and women, not angels. And science had its beginnings in rebellion: its symbol was Lucifer.

Things are not so different today, except in one vital feature. Lip service is still paid to total objectivity, while science, its research, its paradigms, and its applications, are dictated by more pragmatic, if less publicized, assumptions. The big difference now is that the war with authority is largely over; the state and big business pay the majority of our white-coated pipers and, so, call most of the tunes.

As has been pointed out once or twice, scientists, no less than the rest of us, do not live, work, and think in social vacuums, but within the emotional, philosophical, and attitudinal framework, the worldview of their times and places. This is especially noticeable in the social sciences, in sociology, psychology, education, economics, and related disciplines. But even in the field of physics, this attitude is not unknown. A number of observers of science and scientists have pointed out that the eagerness with which a new generation of German and Austrian physicists embraced acausality in quantum mechanics in the 1920s cannot be understood, or even considered, except in relation to the political, social, cultural, and philosophic incoherence in the republics of Weimar and Vienna. The consequent and very rapid spread of the theory throughout the West—that our universe is governed by uncaused, undetermined, and indeterminable chance—speaks volumes about us and our psychology. What it tells us about external reality is less clear.

In the good old days of Victorian stability, when everyone knew his and her place in the scheme of things, physics saw cause and effect as a beautiful, unbroken chain of law and sweet reason. Biologists, even today, interpret Darwinism and things like sociobiology and IQ in a way remarkably consistent with their personal, political outlook and voting behavior patterns.

This is so, and only as it should be. Science was never neutral. It cannot be neutral. Anything that forces us to think cannot be neutral. Reason, rationality, are never neutral. Seventy years ago J. B. S. Haldane told us why:

> The conservative has but little to fear from the man whose reason is the servant of his passions, but let him beware of him in whom reason has become the greatest and most terrible of the passions. These are the wreckers of outworn empires and civilizations, doubters, disintegrators, deicides. . . .

Splendid words. My only question is, in just how many of our scientists has reason become the greatest and most terrible of the passions?

If I don't appear to be as humble as I really ought to be, I blame this on the fact that too many scientists are unreliable guides to science, to reality; too much inclined to speculate idly, rather than to speculate to good purpose, and to philosophize, which they generally do badly, because they aren't trained philosophers. On the other side of a very different coin, philosophers of science (and in this category I include sociologists of science and historians of science) are too often useless as observers of and commentators on science; they really know very little about science because they are almost always trained in the humanities. Many critics of science in the last century fell into this category. More to the point, many current critics of science still do, and this is unforgivable. Even when critics write cogently and coherently about science, which they sometimes do, they're still writing from a standpoint of ignorance and unawareness, and even I can spot this, just as I can spot scientists out of their depth in philosophy. Both the philosophizing scientist and the scientific philosopher are too deeply entranced in their navels. The biologist Steve Jones puts things this way:

> There's a disease of middle-aged literary men called Hearty Degeneration of the Fat; when you get old, you boom about Big Issues. G. K. Chesterton was a classic example. Scientists, I guess, have a related problem—Anguished Uncertainty of the Elderly is probably a better term. All of a sudden you forget that science is the art of the answerable and you begin to speculate about things that basically lie outside science altogether.

It was this same Steve Jones who wrote that "philosophy is to science what pornography is to sex."

Of course, the best critics of science are found among the best scientists; best because they're shrewd enough to be dealing with the things they really know about and because their criticism is constructive and they're not out to pull any wool over anybody's eyes, including their own.

When all's said and done, I have faith in science—and in a few scientists, too. □

"The best critics of science are found among the best scientists; best because they're shrewd enough to be dealing with the things they really know about . . . and they're not out to pull any wool over anybody's eyes, including their own."

Ralph Estling writes from Ilminster, Somerset, U.K.

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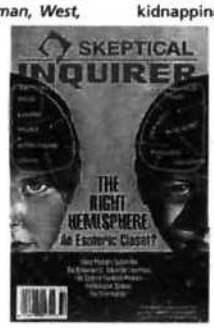

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A Geologist's Enlightened Notes on 'Crystal Power'

HANS G. MACHEL

From October 13 (a Friday!) to October 15, 1995, an event called "A Psychic Affair" took place on the Northlands Exhibition Grounds in Edmonton, Canada. The newspaper advertisements promised that the fair would be featuring "world-class psychics, astrologers, palmists, numerologists, past lives, crystal ball, teacup, and holistic practitioners. . . ," and further listed "books, crystals, gems, aura camera, computer printouts, etc. etc."

As a professor teaching an undergraduate geology course at the University of Alberta, I had just covered in class crystals, minerals, and rocks. I decided to invite my students to attend this fair, with the goal of finding out about "crystal power." We came with a pretty good understanding of what crystals are, what types of energies are present in crystals to bond atoms in crystal structures, and where and how crystals form in nature. I had told my students to expect that the psychics would likely ascribe many amazing powers to crystals that did not seem to have anything to do with the physical energies that are present and active in crystals (such as covalent bonds, ionic bonds, lattice vibration, etc.). We decided to ask the psychics some questions about crystals and to make note of the claims the psychics would make about them.

There were a number of stands selling "crystals." Hundreds of specimens of 60 to 80 types of minerals were on sale (some specimens were exceptionally pretty). No distinction was made between crystals and minerals. As is well known in crystallography, a mineral is a crystal only if it grew with planar surfaces that form predictable, constant angles with one another (these angles differ from mineral to mineral and can be used for mineral identification). At this fair, many artificially polished or naturally rounded and abraded mineral specimens were sold as "crystals."

At one stand a chart was offered free of charge called "Crystal Awareness Guide II," published by "Legion of Light," which lists the most amazing "powers" of about 48 minerals, some of which are so rare that they are hard to come by. The "powers" ascribed to the various types of crystals on display spanned the widest range of possibilities under the sun. Apparently, there is almost nothing in the universe that cannot be influenced, or is not influenced, by some type of crystal or another.

Faced with this bewildering array of information, we decided to find out more about the "powers" of one type of crystal. We picked clear, colorless quartz because it was the most common type of crystal on display at this fair. We asked four of the "psychics" separately (everyone having a stand at this fair claimed to have psychic powers): "What are the powers of clear, colorless quartz?" The psychics delivered a profusion of answers. Here are some of the answers, in the order given.

Monica, Inspirational Advisor:

- clear quartz attracts a lot of positive energy;
- I don't really know much about them, go to Theodore, The Crystal Man;
- if you listen to the story of the crystals, you'll get the message;
- science will not tell you everything about crystals;
- I don't really know much about them —there are a lot of books about them;
- here I have one with points at both ends—that means more energy;
- this one even has two peaks at one end—that means *lots* of energy;
- you have to hold it and squeeze it.

Theodore, The Crystal Man:

- quartz is the granddaddy of all crystals;
- it means power, enhancement, programmability;
- it has the property of consistency;
- it gets tired because of many people touching it;
- it might require a few things of preparation, it might have to get activated so it can give off its power;
- it loses some of its energy when it comes out of the ground;
- it gets into this vibration with your body and energy comes out of it;
- you have to lay them (crystals) out in a grid, and then they will transmit their energy to you;
- it may not work for you, but it works for many people.

Faye, of "Mystic Treasures":
- it's good for healing;
- it's how it feels to *you;*
- the crystals are transmitters of bad or good feelings, they amplify whatever you feel toward the outside world—they act as receivers too;
- you have to wash them from time to time;
- in Atlantis we used them as thought forms;
- a crystal destroyed Atlantis—this is when the Earth shifted its tilt for the first time;
- England is the last piece of Atlantis that is still there;
- everybody is psychic, just most people don't let it out.

Bonnie, Psychic Advisor:
- lots of power and energy;
- it's for healing;
- I use quartz for angel energy;
- this crystal is for communicating with my angel;
- don't you see his wings in the crystal?

It is quite obvious that these psychics (a) listed an amazing array of irrational, illogical, and unsubstantiated claims (whenever we asked how they knew this or that, we were told that "this is in books," or "this is how I feel about them," etc.); and (b) that these claims were given in a completely disjointed sequence. Listening to these psychics was not unlike flipping through a large number of television channels with a remote control, and picking up three to five sentences on each channel before changing to the next. Strung together from, say, 50 television stations, these sentences would form an equally disjointed monologue, except that the few sentences from each individual station would make sense.

The Other Woman:
Faye also sold small wands that had "crystals" mounted at both ends. Supposedly, these wands can be used to locate pain or illnesses. On that day, I had a very sore shoulder from a fall (which I did not tell her), so I decided to put this to a test.

I asked Faye to demonstrate the use of these wands to me. She called upon one of her colleagues, another woman, who was touted as "really good" at this.

"At one stand a chart was offered free of charge called 'Crystal Awareness Guide II,' . . . which lists the most amazing 'powers' of about 48 minerals."

This woman picked a wand with a clear quartz crystal mounted at one end and a green jasper pebble at the other, and then tried to find diseases or pains in my body by pointing the end of the wand with the clear quartz crystal at me, moving the wand up and down about 20 to 30 centimeters in front of my torso. She repeatedly pointed to my intestines in the lower left abdomen (about 15 centimeters below the stomach), and repeatedly told me that there is "something with your stomach." She then pointed to the middle of my abdomen and told me that my back is sore. The pain in the "stomach" may be "left over from the back," she said. I was holding a piece of paper between the wand and a part of my chest, so she asked me to move the paper away because it would interfere with her search. She did not "find" any more points of pain or illness.

It should be noted that my stomach, intestines, and back are fine. But this woman did not find the strong pain in my shoulder.

Obsidian:
One stand had for sale pebbles of obsidian, called "Apache tears." These pebbles aren't even crystals, either in shape (they do not have planar crystal surfaces with defined angles), or in structure (obsidian is a volcanic glass that is amorphous, i.e., its atoms do not form a crystal structure).The attached label read: "These pebbles protect the softhearted, gentle people of the world from being misused and prevent them from being emotionally drained by others. Obsidian holds your energies. Be careful not to allow others to touch it. Rejuvenate it periodically by immersing it in sea salt, sand, or sunlight. Whatever works for you and it. It acts as a filter and keeps out the unwanted." Right.

Chakras:
Faye also sold flyers containing a Chakras chart, which is a sketch of the human body with eight colored dots along the middle, from the head to the crotch. The flyer states: "Just as the nervous system coordinates activities within the physical body, there are centers in the energy body that help to integrate it with our physical vehicle, and with our mind and our emotions. These energy centers look and feel like spinning spheres when you turn your senses inward and explore them." According to Faye, one should buy eight "crystals" (pointing to a basket full of colored pebbles) that match the colors shown by the dots on the chart and lay out these "crystals" in a line under one's bed before going to sleep, matching the sequence of colored dots on the chart. Then, during sleep, energy will flow between the "crystals" and the body. I did not buy any "crystals," so I did not test the alleged flow of energy during sleep. Also, even though I tried hard, I did not detect those "spinning spheres" inside my body, alluded to in that flyer.

We left the fair after about two hours, truly enlightened. We had been given a profuse performance of irrational claims. That, however, did not really surprise us. After all, there is money to be made selling crystals (and they sell well!). What did surprise us, however, was how sincere these psychics were, and that they really seemed to believe in what they were saying.

Another conclusion we drew was that any one of us could have had a stand at that fair selling minerals, ascribing any powers to them. Shortly before leaving the fair, Faye actually said to us that "everyone is psychic—there isn't anything in here (the fair) that *you* could not do yourself." Amen. □

Hans G. Machel is a professor in the Department of Earth and Atmospheric Sciences, University of Alberta, Edmonton, Alberta, Canada.

Carl Sagan on Science and Superstition

Carl Sagan's article "Does Truth Matter?" (March/April 1996) raises an interesting issue for humanists concerning the use of the word "spirituality" to refer to the feeling and sense of awe and wonder that can come from the contemplation of the beauty and subtlety of life and the universe as revealed by science. Perhaps it is desirable to transform the meaning of "spirituality" from its current almost universally understood dualistic and supernaturalistic basis, to a naturalistic, humanistic, and psychological basis. This could make it easier for believers in traditional supernaturality to make the transition to a naturalistic interpretation without having to reject the term itself, which could be difficult for someone having a life-long belief in "spirituality" of some kind. This could facilitate a decrease in those who have supernatural beliefs, and an increase in those who accept naturalistic and humanistic descriptions and explanations of life and the universe. This would clearly be a good thing.

On the other hand, any "positive" statements by scientists about "spirituality" could cause many listeners or readers to assume that he or she *does,* in fact, believe in some kind of nonphysical, nonscientific, supernatural spirituality—the current meaning for the vast majority of nonscientists, and probably even for most scientists. This could, ironically, reinforce the very beliefs that the speaker or author would like to change. Thus, I think that it is worth considering whether the natural human emotion of awe and wonder that science can engender should be described as "spirituality," or by terms that do not have supernatural connotations.

R. H. Davis
Palo Alto, Calif.

The sidebar "The Metaphysicist Has No Laboratory" in Carl Sagan's article expresses a view that is unfortunately common among those who wish to be scientific. The idea that metaphysics is in opposition to science is fueled by some of the bizarre metaphysical theories philosophers have proposed. However, in the absence of a theory of reality as such, science would collapse.

Let's look at Robert Wood's comments. "The physicist has an idea." Ideas are significant only if they relate to reality. "The more he thinks it through, the more sense it seems to make." This implies that the thinking process is efficacious. "He consults the scientific literature." This is a sensible, or even just meaningful, thing to do only if there is a reality common to himself and other thinkers.

I could go on to show that each step of the scientific process is based on an implicit metaphysical view—a view of what reality as such is. One could hold a different view, such as the notion that our senses are forever befuddled by demons who trick us in ways too subtle for our minds to notice. With this metaphysics, we would have to regard science as an exercise in futility. Ideas would be useless, thinking them through would be in vain, and we couldn't even know what the literature really said.

The job of philosophy is to give us answers to the basic questions that underlie all knowledge. Do we have reason to regard the scientific method as valid? Is there any cause beyond convention to believe that there is a "real world"? Those who avoid these questions may be afraid that looking too deeply will undermine the foundations of reason and show everything to be just groundless belief at root. But failing to address them leaves the answering to those who have no desire to support reason. If we fail to defend the validity of science, exhortations to be scientific will serve no purpose.

It is not true that "the metaphysicist has no laboratory." Rather, since the truths of metaphysics are those that apply to our entire realm of knowledge, the laboratory of metaphysics is the universe.

Gary McGath
Hooksett, N.H.

Carl Sagan's "Does Truth Matter?" was a classic example of what's wrong with SKEPTICAL INQUIRER. *SI* and the great majority of its contributors are eager to toss cream pies at TV psychics, astrologers, flying saucer crashes in the desert and lots of other nonsense one sees in supermarket tabloids. But Sagan and *SI* tiptoe oh so very carefully around mainstream Judeo-Christian religion. That's the taboo you won't go near.

Few people really devote their lives (or much of their money) to the various fortune tellers, spoon benders, and alien autopsies which *SI* takes such joy in debunking. This is trivial stuff. You're swatting at a gnat while ignoring an elephant.

Brian Templeton
Des Moines, Wash.

I'm nothing less than exultant, having just finished Carl Sagan's article "Does Truth Matter? Science, Pseudoscience and Civilization." The author has a gift for eloquently articulating arguments I ofttimes find difficult to coordinate into cohesive thoughts.

But what compels me to respond thus is Dr. Sagan's quotation from Edmund Way Teale: "It is morally as bad not to care whether a thing is true or not, so long as it makes you feel good, as it is not to care how you got your money as long as you have got it." This raises the question: are we who identify ourselves as skeptics as entirely skeptical as so labeling ourselves allows? Where ends pseudoscience?

Dr. Sagan in his various books, articles, interviews, et al., has left no doubt about his belief in extraterrestrial "life. . . ."

There is absolutely no evidence whatsoever for the existence—or even the possibility—of "life" anywhere else in the universe. And I defy the scientific (or the pseudoscientific) community to provide one shed of credible evidence to the contrary.

My intention is not to admonish Dr. Sagan—or anybody else—for speculating about extraterrestrial "life," or for wishing it to exist. But I've detected in Dr. Sagan a propensity for expressions of certainty—or near certainty—when he approaches the subject. And this disposition is not consistent with genuine, instructive skepticism. . . .

Thomas L. Munden
San Francisco, Calif.

Representativeness

Gilovich and Savitsky ("Like Goes with Like: The Role of Representativeness in Pseudoscientific Beliefs," March/April 1996) fall into a common trap of psychologists and others who ignore the results of the past twenty years of research in linguistic pragmatics, the study of how meaning emerges from language in context. In the following example, (1) has a very different meaning

when uttered in connection with one's work schedule than when uttered after having driven one's car up to a parking meter.

(1) I have some free time.

In particular, they show no awareness of the fact that the meaning derived from a sentence by a hearer or reader cannot be assumed to be the same as intended by its speaker or writer.

Gilovich and Savitsky correctly analyze the logic of (2) and (3) *as individual sentences.*

(2) Linda is a bank teller.

(3) Linda is a bank teller and is active in the feminist movement.

However, subjects typically understand (2) and (3) not as individual sentences, but *as parts of a coherent discourse,* together with the paragraph that describes what they are about. When (2) and (3) are presented together, subjects typically *understand* (2) as (4), because of a perceived contrast with (3).

(4) Linda is a bank teller and is not active in the feminist movement.

(You can test this claim by asking them.) They then proceed to reason *correctly* about (3) and (4). People are not wrong to understand language in this way, just as the Earth is not wrong to revolve around the sun, contrary to former expectations. That's just how the relevant part of the human brain works.

In other words, it is not the subjects' reasoning, but the experimenters' naive assumptions that turn out to be incorrect in this case. The subjects' alleged "Fallacy of Conjunction" is really the experimenters' own "Fallacy of Ignored Implicit Inference." As often happens in the behavioral sciences, ordinary people turn out to be smarter (and more rational) than some of the scientists would like to think they are.

The complexities of language understanding are only beginning to be understood even by those of us who have been studying that process professionally. However, there is already an extensive literature on the topic. Psychologists and others who seek to explain human behaviors would do well to familiarize themselves with it.

Steven Cushing
Jamaica Plain, Mass.

(Steven Cushing is author of Fatal Words: Communication Clashes and Aircraft Crashes, *Chicago: University of Chicago Press, 1994)*

Thomas Gilovich and Kenneth Savitsky reply:

Steven Cushing is correct to point out that various pragmatic considerations determine "how meaning emerges from language in context." Indeed, research psychologists have been in the forefront of the effort to demonstrate and publicize that fact (Clark 1992; Pinker 1994). Amos Tversky and Daniel Kahneman, the two psychologists responsible for the "Linda problem" described briefly in our article on representativeness, certainly understood this notion well and went to great lengths to ensure that it was not responsible for their results. In a different version of the experiment than the one we described, some participants were given the description of Linda and then asked to assess the likelihood that she would become a bank teller. Other *subjects were asked to assess the likelihood that she would become a bank teller active in the feminist movement. Because the participants assessing the former outcome are never exposed to the latter, there is no reason—pragmatic or otherwise—for them to interpret "Linda is a bank teller" to mean "Linda is a bank teller and is not active in the feminist movement." Nevertheless, the same pattern was observed in the subjects' ratings, namely, Linda was judged less likely to be a bank teller than a bank teller* and *a feminist (Tversky and Kahneman 1983). It thus appears that it is indeed the average person's faulty reasoning, and not "the experimenters' naive assumptions," that are responsible for the conjunction fallacy.*

Clark, H. H. 1992. *Arenas of Language Use.* Chicago: University of Chicago Press.

Tversky, A., & D. Kahneman, 1983. Extensional versus intuitive reasoning: The conjunction fallacy in probability judgment. *Psychological Review,* 90: 293-315.

Pinker, S. 1994. *The Language Instinct.* New York: HarperCollins.

Tell me true—did Gilovich and Savitsky ("Like Goes with Like") include this as a test to see if we could catch these two examples of the representativeness fallacy (in a single phrase, no less), or is it an honest error?

In the first full paragraph on page 36, they say "Tiny viruses give rise to devastating epidemics like malaria or AIDS. . . ." I won't belabor the point that, unlike the tiny virus that causes AIDS, malaria is caused by unicellular parasite orders of magnitude larger than a virus.

But the Random House Unabridged Dictionary says:

> ep-i-dem-ic (ep-i-dem-ik) adj. 1. Also, ep-i-dem-i-cal. (of a disease) affecting many persons at the same time, and spreading from person to person in a locality where the disease is not permanently prevalent. 2. extremely prevalent; widespread.—n. 3. a temporary prevalence of a disease. 4. a rapid spread or increase in the occurrence of something: an epidemic of riots.

And by using the noun "epidemic" to describe malaria, one uses a term that is representative of, but not applicable to, a disease that has been present and infecting humans for tens if not hundreds of thousands of years; the correct noun to describe malaria is:

> en-dem-ic (en dem-ik) adj. Also, en-dem-i-cal 1. natural to or characteristic or a specific people or place; native, indigenous: endemic folkways; countries where high unemployment is endemic. 2. belonging exclusively or confined to a particular place: a fever endemic to the tropics.—n. 3. an endemic disease.

Even if they deny it was deliberate, I'll still have my suspicions.

Thanks to the authors for an excellent article.

Keith Conover, M.D.
Department of Emergency Medicine
Mercy Hospital of Pittsburgh
Clinical Assist. Professor
Department of Emergency Medicine
University of Pittsburgh

David Hume asked, will the future resemble the past? When Gilovich and Savitsky give examples of representativeness, they omit Hume's question but their analysis applies. Heuristics, they say, are what "people use to render complex problems manageable. Heuristics are often described as judgmental shortcuts that generally get us where we need to go—but at the cost of occasionally sending us off course."

We all generalise from past experience but now and then we are led astray. The issue is to determine when generalisations, as they put it, "give rise to misperception and illusion." There can be no general answer but we can discover and learn to avoid error.

Scientific inquiry is especially helpful. This approach seems to me to solve the age-old philosophical problem of induction.

Daniel Goldsmith
Vancouver, B.C., Canada

Vampire Lore

Paul Barber's masterly review of vampire lore (March/April) arrives at the same conclusion that I did. As a pathologist with a focus on autopsy, I've been surprised how much liquid, fresh-appearing blood can be present in the trachea, throat, and mouth of a dead body after a few days, even without obvious gaseous distention. We call it the "bloody purge," and any medical examiner reading Bram Stoker's account of the messy staking of Miss Lucy will recognize it.

You could not mistake any of the common porphyrias for vampirism. But the rare "congenital erythropoietic porphyria" features excessive facial and body hair, extreme sensitivity to light, fluorescent-red teeth, and (at its worst) hideous mutilation of the features which reminds me of some decomposing bodies. As an autosomal recessive disease, there have probably been inbred populations where several of these unfortunates have lived. Isolated mountain communities are a possible location. We can easily imagine superstitious horror arising in their neighbors. Although I'm not aware of these folks ever having used blood-drinking as a home remedy, the mainstay of treatment for common acute intermittent porphyria is injection of altered heme, the red pigment in blood.

I've seen both a mirage of the star Sirius, and a weather balloon. I could have mistaken either for a UFO. I think we all know how easy it is for humans to draw similar wrong conclusions from a variety of observations.

Edward Friedlander, M.D.
Chairman
Department of Pathology
University of Health Sciences
Kansas City, Mo.

Though very interested in Paul Barber's well-researched article on the evolution of the vampire legend, I think he is mistaken in attributing its association with Vlad Drakul solely to Bram Stoker. It was certainly his Victorian melodrama *Dracula* that popularised the association, but the Irish author originally heard the story from the Hungarian explorer, adventurer, and linguist, Armin Vambery, when he visited Britain. The imaginative Vambery, however, may well have embroidered the folk-legend he had picked up in eastern Europe.

Barbara Smoker
Bromley, Kent, U.K.

Gardner on Claiborne Pell

Martin Gardner, in "Claiborne Pell: The Senator from Outer Space" (*SI*, March/April 1996), described the Army Research Institute as fearful "that the Soviets were decades ahead of the United States in paranormal research." I believe that the quoted statement actually comes from an alarmist 1984 article by the columnist Jack Anderson. The motivation for the ARI-funded study, however, is clearly stated in the preface to *Enhancing Human Performance.* (National Research Council 1988) It is "to examine the potential value of certain techniques that had been proposed to enhance human performance. . . ." The preface also makes it clear that the study was designed to question the promotion by commercial vendors of "training packages" that are based on claims that are poorly supported in the peer-reviewed literature. Paranormal techniques were included among these "packages." Moreover, ARI has never funded any original research on paranormal phenomena, and, as a result of the study performed by the National Research Council, has a good reason for not doing so in the future.

Michael Drillings
Arlington, Va.

Martin Gardner's article on Claiborne Pell criticized the Senator for serving on the advisory board of the International Association for Near-Death Studies (IANDS), an endeavor Gardner described as "purporting to establish that persons close to death often get peeks into the hereafter." IANDS has never had as a goal the establishment of any one interpretation of near-death experiences, but has always promoted an objective and unbiased interest in studying these phenomena. IANDS welcomes any opinion on the NDE that is based on empirical observation, just as CSICOP professes to encourage unbiased responsible investigations of paranormal claims. In fact, IANDS's peer-reviewed scholarly journal, *The Journal of Near-Death Studies,* has counted CSICOP luminaries on its editorial board and among its authors. Criticizing Pell for serving on IANDS's advisory board is like criticizing Gardner for serving as a CSICOP Fellow, on the erroneous assumption that because CSICOP is interested in paranormal claims, it purports to establish their validity.

Bruce Greyson
Professor of Psychiatry
Health Sciences Center
University of Virginia
Charlottesville, Va.

Visual blue shift not a fallacy?

Of all the material we published in our March/April issue, the single item that generated the most mail was a letter to the editor, "Visual Blue Shift Fallacy?" Here are three of the letters, plus a reply from science fiction author Greg Bear, who was gently criticized in the original letter.

In your March/April Letters column, Alistair Blennerhassett criticized science fiction writers for stating that the Doppler effect would produce a visible color change in stars at relativistic speeds. He argued that the Doppler effect would only change the wavelengths of the spectrum lines, but not the overall color of a star.

Unfortunately, that argument is incorrect. It assumes that a star radiates equally at all wavelengths. But no star does this. Instead, the overall spectrum of a star roughly approximates that of a black body at the star's temperature, with a peak at a wavelength that depends on the temperature. The line spectrum of the star is then superimposed on this overall curve. The Doppler effect shifts the entire spectrum, not just the absorption lines.

The sun has a peak at a wavelength of roughly 5000 Angstroms, around the middle of the visible spectrum. Since the sun's radiation curve has (very roughly!)

equal amounts of energy on either side of the peak, the overall effect is that the sun looks yellowish-white in color.

Suppose we move away from the sun at one-third the speed of light. The relativistic Doppler shift for a wavelength of 5000 Å would be a little over 2000 Å, which would shift the peak of the sun's spectrum to 7000 Å, near the longest wavelengths visible to the human eye. With the peak at the red end of the spectrum, and the intensity decreasing toward the blue, the sun would look distinctly red, perhaps about the color of Aldebaran.

If we approached the sun at the same speed, the wavelength shift would move the peak to around 3000 Å, in the ultraviolet. With the intensity now decreasing from the blue end of the spectrum to the red end, the sun would look bluish, about like the star Sirius.

Greater speeds would produce even greater color shifts. At the same time, aberration would shift all star images forward, so they would be increasingly concentrated around the point toward which the spacecraft was aimed.

R. Erik Zimmermann, Director
Robert J. Novins Planetarium
Toms River, N.J.

Alistair Blennerhassett would be correct, that there would be no apparent color shift, if stars emitted light uniformly at all wavelengths. The dramatic color shift which is a favorite stock of science fiction would be correct if stars emitted monochromatic light, like a sodium lamp. Thermal emission, which dominates stars, covers a broad spectral range, but is not flat, so the actual effect would be something between the extremes mentioned.

Effectively, stars in front of a starship moving close to the speed of light would appear "hotter" than they really are, and stars behind would appear "cooler" than they really are. So individual stars would be "bluer" in front and "redder" behind. But the natural range of surface temperatures of stars is so great that there exist stars so cool that their peak radiation is in the infrared, and others so hot that their peak radiation is in the ultraviolet so that as some stars are reddened (or "blued") out of the visual spectral range, others would come in to replace them. Thus I suspect that to first approximation, Blennerhassett is correct; certainly the color shift would not be nearly as dramatic as suggested in some science fiction stories.

Because of the nature of the Planck function (the energy distribution over wavelength of thermal radiation), which is rather shallow on the red side of the peak but very steep on the blue side, some stars can appear very red, but none can appear very blue. Stars which are so cool that the peak in the function is in the infrared (e.g. Antares) appear very red because we are seeing only the short wavelength end of the Planck function, which is very steeply sloped. On the other hand, very hot stars with a spectral peak in or near the ultraviolet (e.g. Spica) appear more or less "white," because while the peak in the energy spectrum may be blueward of the visual sensitivity of our eyes, the slope in energy level across the visual range is shallow and yields only a sensation of "slightly bluish" to our eyes.

So certainly stars in front of a starship would not appear noticeably blue, although maybe "less red" on average. To the rear, there might be a larger fraction of "reddish" appearing stars, but again individual stars could not appear deeper red than other, cooler stars viewed in their own reference frame.

Alan Harris
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, Calif.

I realize that Greg Bear is quite competent to defend himself, but as a member of the rather large group of science fiction writers who have also been involved in what Alistair Blennerhassett calls the "Blue Shift Fallacy" I feel justified in joining in.

It is quite true that spectral line positions have to be used rather than subjectively measured colors as check points in the measurement of radial velocities (especially in these recent ones where extra-Solar planets are being detected by measuring meter-per-second velocities). However, the argument that visible energy Doppler-shifted out at one end of the spectrum will be made up by energy shifted in at the other implies that the curve of energy emitted against wave length or frequency by a hot body is a horizontal line. This is not the case. It is a distorted version of the regular probability bell curve, not too wildly changed on the low energy side of the peak but very much so on the high side. The gains *don't* balance the losses, though for ordinary stellar radial velocities the difference would, as Mr. Blennerhassett says, not be detectable by the human eye.

However, at what might be called science-fiction velocities, matters are different. The sun's energy curve peaks at about 550 nanometers; we can see to about 700 at the long-wave end of the visible band, so much of the sharp short-wave drop-off in the curve contributes to our perception of sunlight color. If an observer is approaching our sun at half the speed of light, the peak is shifted (Wien's Law) to about 225 nm, well into the ultraviolet, and the curve is sloping upward toward short wavelengths all through what has become the visible region. The sun will appear blue-white.

Similarly, for a star like Rigel, an observer receding at half the speed of light will have the peak shifted into the visible region; but the relatively steep negative slope of the curve on the short-wave side will deprive the new apparent visible light of a large part of its violet end, and Rigel would appear quite sunlike (or even redder; I haven't tried to do an actual computation, I admit).

I am not claiming that all my colleagues have considered the matter to this depth of detail, but I know I'm not the only one who has.

I'd be interested in hearing how many letters you receive from astronomers, physicists, science-fiction enthusiasts, and others on this matter; one can hope that there may possibly be a bright side to our admittedly rather sad science education.

Harry C. Stubbs ("Hal Clement")
Milton, Mass.

On first look, I felt that Mr. Blennerhassett's critique might have some validity—but upon reading the comments of Hal Clement (Harry C. Stubbs) and others who wrote you, and after consulting with Gregory Benford, I have to concur with them. The problem is—I'm no pioneer in this area, and certainly no expert.

I believe the earliest use of the "starbow" was in Frederik Pohl's fine story, "The Gold

at the Starbow's End." Poul Anderson's "Tau Zero" inspired me and many other young science fiction writers in 1970 with its picture of near-light-speed travel.

I might add that what I pictured in "Anvil of Stars" was a relativistic "necklace" of star images, twisted and contorted depending on which way the viewer is facing. I remember basing this upon some computer simulations, but I forget the source.

The colors in the "necklace" depend on relative intensity of stellar spectra for stars of different temperatures. If I read my source text right (*Colours of the Stars* by Malin and Murdin, Cambridge 1984), and factor in the comments of *real* experts, then as one approaches "science-fiction velocities," approaching or receding from a star, the entire curve of the star's intensity vs. wavelength diagram will shift left or right, and the slope of the curve as it passes through the visible part of the spectrum will determine how extreme the visual color shift will be, toward red or blue, with the additional detail that some stars will appear (visually) dimmer, and others brighter. Given sufficient velocity, X-ray sources will become visible ahead, and infra-red and radio sources behind.

I hope my amateur skills aren't muddling the issue any further!

And thanks to Alistair Blennerhassett for making us re-think this whole question.

Greg Bear
Lynnwood, Wash.

NBC's 'Mysterious Origins'

In anticipation of the uproar over NBC's airing of the thinly disguised creationist program "Mysterious Origins of Man" on Sunday, February 25, I thought it might be a good idea to look into the underlying source of the program.

Much of this program was based on the book *Forbidden Archeology* by Michael Cremo and Richard Thompson, who were some of the main characters in the program. This book is by no means a real scientific work. Indeed, it is an extreme creationist work. But Cremo and Thompson are far from being mainstream creationists such as those affiliated with the Institute for Creation Research (ICR) that we are all familiar with. Cremo and Thompson are a different kind of creationist: followers of the Hindu cult of Transcendental Meditation. Here's proof:

> 1) The book was published by the Bhaktivedanta Institute in San Diego,
> 2) The book is dedicated to "His Divine Grace A. C. Bhaktivedanta Swami Prabhupada,"
> 3) In the forward, Pierce J. Flynn writes "The authors admit their own sense of place in a knowledge universe with contours derived from personal experience with Vedic philosophy, religious perception, and Indian cosmology."

Please note that I don't feel that this makes the authors' statements wrong, but it's obvious that there is no way for them to exclude their biases in presenting them since their extreme religious beliefs determine who they are as individuals.

By broadcasting this program, I believe that NBC must be branded as dupes, willing or unwilling, to a religious sham, since the creationist inspiration for the program was disguised as real science in an attempt to fool the general public.

Ray Sutera
Ocean Grove, N.J

During the 1980s, we witnessed several lethal outbreaks of the infamous Computer Virus. I am proud to announce my discovery of an entirely new virus, one that perhaps evolved from the former. The victims of this plague are not computers, but television networks. This new virus jumped species, as it were.

The first outbreak of my higher-evolved species appeared on KCBS-TV here in Los Angeles a year ago. Bizarre behaviors associated with the discovery of Noah's Ark in Turkey appeared on KCBS-TV in an hour-long pseudoscientific documentary. Now, it seems that my new virus has infected KNBC-TV.

During prime time on Sunday, February 25, all Los Angeles witnessed the appearance of similar bizarre behaviors on KNBC-TV. For one full hour, viewers were educated about new and improved scientific theories—like the There's–No–Missing–Link Theory, or like the The–Past–Was–a–Complete–Catastrophe Theory, not to mention the famous Scientists–Are–Conspiring–To–Hide–The–Truth Theory.

As discoverer, I claim the right to name the behavior associated with my new discovery. I name it "St. Rupert's Dance," after its famed occurrences on Fox Television. Careful research on my part has uncovered similar outbreaks in other species, such as supermarket tabloids and formerly well-respected newspapers.

Now, if I can just make it past Peer Review and get into the right journal. . . .

Edward Mills
San Jacinto, Calif.

I have read some of the articles and reader comments about the "Alien Autopsy" film (*SI*, January/February and March/April).

People seem to be missing the one major flaw that stood out the very first second I saw the film: the "alien" looks too human! Everything else is just minor details.

Simply considering genetics should be sufficient to cast serious doubts about the authenticity of this film. When different species just on this planet exhibit such diverse physical appearances, I seriously doubt any alien race is going to look as human as the body shown in that film!

To be sure, for an alien race to develop space travel they would have to have certain physical capabilities . . . but at best (in terms of similarity to us), that only means a torso, legs, arms, and head of some sort. Unless there is some unknown historical connection between our race and an alien race (some long forgotten colonization of this planet from afar?) any aliens we encounter would most certainly LOOK alien from top to bottom, just in the exact shape of recognizable features of the head.

The body in the "Alien Autopsy" film could easily pass for a human body with makeup . . . the film must be a fake.

Joseph P. Maia
Burlington, N.J.

The letters column is a forum for views on the matters raised in previous issues. Letters should be no more than 250 words. Due to the volume of letters, not all can be published. They should be typed double-spaced. Address: Letters to the Editor, SKEPTICAL INQUIRER, 944 Deer Dr. NE, Albuquerque, NM 87122.

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BRAZIL. Opcão Racional, Luis Gutman, Rua Santa Clara,431, Bloco 5, Apt. 803, Copacabana - Rio de Janeiro 22041-010 (55-021-237-2088).

CANADA. Alberta Skeptics, Heidi Lloyd-Price, Secretary, P.O. Box 5571, Station A, Calgary, Alberta T2H 1X9. **British Columbia Skeptics,** Lee Moller, contact, 1188 Beaufort Road, Vancouver V7G 1R7. **Manitoba Skeptics.** Contact John Toews, President, Box 92, St. Vital, Winnipeg, Man. R2M 4A5. **Ontario Skeptics,** Henry Gordon, Chairman, 343 Clark Ave West, Suite 1009, Thornhill Ontario L4J 7K5. **Sceptiques du Quebec**: Donald Gilbert, C.P. 202, Succ. Beaubien, Montreal H2G 3C9 (e-mail: sceptiq@ ibm.net, web: libertel.montreal.qc.ca/ info/sceptiques).

CHINA. China Association for Science and Technology, Contact: Shen Zhenyu, Research Center, CAST, PO Box 8113, Beijing, China. **Chinese Skeptics Circle,** Contact: Wu Xianghong, Box 4-doctor, Renmin Univ. of China, Beijing 100872.

CZECH REPUBLIC. Czech Club of Skeptics, Milos Chvojka, nám. Jiriho z Lobkovic 7, CS-130 00 Prague 3, The Czech Republic.

ESTONIA. Contact Indrek Rohtmets, Horisont, EE 0102 Tallinn, Narva mnt. 5.

EUROPEAN COUNCIL OF SKEPTICAL ORGANIZATIONS. Amardeo Sarma, Secretary, Postfach 1222, D-64374 Rossdorf (FAX: +49 6154 81912).

FINLAND. Skepsis, Ilpo V. Salmi, President. Secretary and contact person: Anneli Aurejdrvi, Sireenitie 10b A2, FIN-01390 Vantaa, Finland. E-mail contact: Sami Hiltunen, sjhiltun@cc.helsinki.fi.

FRANCE. Cercle Zététique, Contact: Paul-Eric Blanrue, 12 Rue David Deitz, 57000 Metz. **Comite Francais pour l'Etude des Phenomenes Paranormaux,** Claude Benski, Secretary-General, Merlin Gerin, RGE/A2 38050 Grenoble Cedex. **Union Rationalist,** Contact: Jean-Paul Krivine, 14, Rue de l'Ecole Polytechnique, 75005 Rue Paris.

GERMANY. Society for the Scientific Investigation of Para-Science (GWUP), Amardeo Sarma*, Convenor, Postfach 1222, D-64374 Rossdorf (Phone: +49 6154 695022, FAX: +49 6154 695021).

HONG KONG. Hong Kong Skeptics. Contact Rebecca Bradley, P.O. Box 1010, Shatin Central Post Office, Shatin, NT.

HUNGARY. Hungarian Skeptics, Gyula Bencze, *Termeszet Vilaga,* P.O. Box 25, Budapest 8,1444. (Fax 011-36-1-118-7506).

INDIA. Indian Skeptics, B. Premanand, Chairman, 10 Chettipalayam Rd., Podanur 641-023 Coimbatore Tamil Nadu. **Indian Rationalist Association,** Contact, Sanal Edamaruku, 779, Pocket 5, Mayur Vihar 1, New Delhi 110 091. **Maharashtra Superstition Eradication Committee,** Dada Chandane, Secy., D/6, First Floor, Super Market, Solapur 413001. **Dravidar Kazhagam,** General Secretary: K. Veeramnani, Periyar Thidal, 50, E.V.K. Sampath Road, Madras - 600 007, Tamil Nadu.

IRELAND. Irish Skeptics, Peter O'Hara, Contact, St. Joseph's Hospital, Limerick.

ISRAEL. Israel Skeptics Society, Philip Marmaros, Chairman, P.O. Box 8481, Jerusalem. (Fax: 972-2-611976, E-mail: charisma@netvision.net.il).

ITALY. CICAP (Comitato Italiano per il Controllo delle Affermazioni sul Paranormale), Largo Europa, 2-35137 Padova. *Scienza & Paranormale,* Massimo Polidoro, Editor, P.O. Box 1117, 35100 Padova. (Tel, Fax: 39-426-22013.)

JAPAN. Japan Skeptics, *Jun Jugaku, Chairperson,* Business Center for Academic Societies Japan, 16-9 Honkomagome 5-chome, Bunkyo-Ku, Tokyo 113.

MEXICO. Mexican Association for Skeptical Research (SOMIE), Mario Mendez Acosta*, Chairman, Apartado Postal 19-546, Mexico 03900, D.F.

NETHERLANDS. Stichting Skepsis, Rob Nanninga, Secretary, Westerkade 20, 9718 AS Groningen.

NEW ZEALAND. New Zealand Skeptics, Vicki Hyde, Chairperson, South Pacific Publications, Box 19-760, Christchurch 5, N.Z., Fax: 64 3 384-5138.

NORWAY. Skepsis, St. Olavsgt. 27, N-0166, Oslo.

RUSSIA. Contact Edward Gevorkian, Ulyanovskaya 43, Kor 4, 109004, Moscow.

SOUTH AFRICA. Assn. for the Rational Investigation of the Paranormal (ARIP), Marian Laserson, Secretary, 4 Wales St., Sandringham 2192. **SOCRATES,** Leon Retief, contact, 3 Hoheizen Crescent, Hoheizen, Bellville 7530.

SPAIN. Alternativa Racional a las Pseudosciencias (ARP). Carlos Telleria, Executive Director, Apdto. 1516, 50080 Zaragoza. **El Investigador Esceptico.** Contact Felix Ares De Blas, Gámez/Ares/Martinez, P. O . Box 904, 20080 Donostia-San Sebastian.

SWEDEN. Vetenskap dc Folkbildning (Science and People's Education), Sven Ove Hansson, Secretary, Box 185, 101 23 Stockholm.

TAIWAN. Tim Holmes, P.O. Box 195, Tanzu, Taiwan.

UNITED KINGDOM. SKEPTICAL INQUIRER Representative, Michael J. Hutchinson, 10 Crescent View, Loughton, Essex IG10 4PZ. **The Skeptic** magazine, Editors, Toby Howard and Steve Donnelly, P.O. Box 475, Manchester M60 2TH. (E-mail: toby@cs.man.ac.uk). **Wessex Skeptics,** Robin Allen, Dept. of Physics, Southampton Univ., Highfield, Southampton S09 5NH.

United States

ALABAMA. Alabama Skeptics, Emory Kimbrough, 3550 Watermelon Road, Apt. 28A, Northport, AL 35476 (205-759-2624).

ARIZONA. Tucson Skeptics Inc. James McGaha, Chairman, 7049 E. Tangue Verde Rd., Ste. 370, Tucson, AZ 85715. **Phoenix Skeptics,** Michael Stackpole, Chairman, P.O. Box 60333, Phoenix, AZ 85082.

CALIFORNIA. Bay Area Skeptics, Wilma Russell, Secretary,17722 Buti Park Court, Castro Valley, CA 94546. **East Bay Skeptics Society,** Daniel Sabsay, Pres., P.O. Box 20989, Oakland, CA 94620 (510-420-0702). **Sacramento Skeptics Society,** Terry Sandbek, 3550 Watt Ave., Suite #3, Sacramento, CA 95821 (916-488-3772), E-mail: tsandbek.mother.com. **San Diego Association for Rational Inquiry,** Contact: Bruce R. Wallace, 945 Fourth Avenue, San Diego, CA 92101 (619-233-1888 Fax:: 619-696-9476).

COLORADO. Rocky Mountain Skeptics, Béla Scheiber, President, P.O. Box 7277, Boulder, CO 80306 (phone: 303-444-5368, web: bcn.boulder.co.us/community /rms).

D.C. Capital Area. National Capital Area Skeptics, c/o D.W. "Chip" Denman, 8006 Valley Street, Silver Spring, MD 20910.

FLORIDA. Tampa Bay Skeptics, Gary Posner, 1113 Normandy Trace Rd., Tampa, FL 33602 (813-221-3533), E-mail: garypos@aol.com.

GEORGIA. Georgia Skeptics, Becky Long, President, 2277 Winding Woods Dr., Tucker, GA 30084.

ILLINOIS. Midwest Committee for Rational Inquiry, Danielle Kafka, President, P.O. Box 2792, Des Plaines, IL 60017-2792. **Rational Examination Assoc. of Lincoln Land** (REALL), David Bloomberg, Chairman, P.O. Box 20302, Springfield IL 62708 (217-522-7554).

INDIANA. Indiana Skeptics, Robert Craig, Chairperson, 5401 Hedgerow Drive, Indianapolis, IN 46226.

KENTUCKY. Kentucky Assn. of Science Educators **and Skeptics** (KASES), Chairman, Prof. Robert A. Baker, 3495 Castleton Way North, Lexington, KY 40502.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM), Dick Schroth, Director, 425 Carriage Way, Baton Rouge, LA 70808-4828 (504-766-4747).

MASSACHUSETTS. Skeptical Inquirers of New England. Contact Laurence Moss, Ho & Moss, 68 Harrison Ave., 5th, Floor, Boston 02111.

MICHIGAN. Great Lakes Skeptics, Carol Lynn, contact, 1264 Bedford Rd., Grosse Pointe Park, MI 84230-1116.

MINNESOTA. Minnesota Skeptics, Robert W. McCoy, 549 Turnpike Rd., Golden Valley, MN 55416. **St. Kloud ESP Teaching Investigation Committee** (SKEPTIC), Jerry Mertens, Coordinator, Psychology Dept., St. Cloud State Univ., St. Cloud, MN 56301.

MISSOURI. Kansas City Committee for Skeptical Inquiry, Verle Muhrer, Chairman, 2658 East 7th, Kansas City, MO 64124. **Gateway Skeptics,** Chairperson, Steve Best, 6943 Amherst Ave., University City, MO 63130.

NEW MEXICO. New Mexicans for Science & Reason, John Geohegan, Chairman, 450 Montclaire SE, Albuq., NM 87108; Dave Thomas, Vice President, PO Box 1017, Peralta NM, 87042.

NEW YORK. Inquiring Skeptics of Upper New York (ISUNY), Contact: Michael Sofka, 8 Providence St., Albany, NY 12203. (518-437-1750). **New York Area Skeptics** (NYASk), Alan Weiss, contact person, 44 Parkview Drive, Millburn, NJ 07041, e-mail: nyask@liii.com. **Western New York Skeptics,** Tim Madigan, Chairman, 3965 Rensch Road., Buffalo, NY 14228.

OHIO. South Shore Skeptics, Page Stephens, 6006 Fir Avenue, Cleveland, OH 44102 (216-631-5987). **Association for Rational Thinking** (Cincinnati area), Joseph F. Gastright, Contact, 111 Wallace Ave., Covington, KY 41014 (606-581-7315).

OREGON. Oregonians for Rationality, Contact, Secretary: John Reese, 7555 Spring Valley Rd NW, Salem, OR 97304 (503) 364-6676, email: joshr@ncn.com.

PENNSYLVANIA. Paranormal Investigating Committee of Pittsburgh (PICP), Richard Busch, Chairman, 8209 Thompson Run Rd., Pittsburgh, PA 15237 (412-366-4663). **Philadelphia Association for Critical Thinking** (PhACT), Bob Glickman, President, PO Box 21970 Philadelphia, PA 19124 (215-533-4677).

TEXAS. Houston Association for Scientific Thinking (HAST), Darrell Kachilla, P.O. Box 541314, Houston, TX 77254. **North Texas Skeptics,** Virginia Vaughn, President, P.O. Box 111794, Carrollton, TX 75011-1794.

WASHINGTON. The Society for Sensible Explanations, P.O. Box 7121, Seattle, WA 98133-2121. Tad Cook, Sec/Treas. (E-mail: tad@ssc.com).

WISCONSIN. Contact person: Roxine McQuitty, MATC-West, 1200 S. 71st St., West Allis, WI 53214 (414-456-5402, Fax: 414-873-4446).

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Gary Bauslaugh, dean of technical and academic education and professor of chemistry, Malaspina College, Nanaimo, British Columbia, Canada

Richard E. Berendzen, astronomer, Washington, D.C.

Martin Bridgstock, lecturer, School of Science, Griffith Observatory, Brisbane, Australia

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Shawn Carlson, physicist, San Diego, Calif.

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Roger B. Culver, professor of astronomy, Colorado State Univ.

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Sid Deutsch, Visiting Professor of electrical engineering, University of South Florida, Tampa

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Karl Sabbagh, journalist, Richmond, Surrey, England

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Steven D. Schafersman, geologist, Houston

Béla Scheiber,* system analyst, Boulder, Colo.

Chris Scott, statistician, London, England

Stuart D. Scott, Jr., associate professor of anthropology, SUNY, Buffalo

Erwin M. Segal, professor of psychology, SUNY, Buffalo

Steven N. Shore, associate professor and chair, Dept. of Physics and Astronomy, Indiana Univ. South Bend

Barry Singer, psychologist, Eugene, Oregon

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- Encourages research by objective and impartial inquiry in areas where it is needed
- Convenes conferences and meetings
- Publishes articles that examine claims of the paranormal
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